



SUMMARY OF THE 12TH SESSION OF WORKING GROUP I OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC) AND THIRTY- SIXTH SESSION OF THE IPCC: 23-26 SEPTEMBER 2013

The 12th session of Working Group I (WGI) of the Intergovernmental Panel on Climate Change (IPCC) and the 36th session of the IPCC were held from 23-26 September 2013 in Stockholm, Sweden. The meeting was attended by more than 400 participants, including representatives from governments, the United Nations, and intergovernmental and observer organizations, and drew worldwide media attention.

The WGI session focused on finalizing its contribution to the Fifth Assessment Report (AR5). The process to prepare the AR5 was launched by the IPCC in 2008. The WGI contribution is the first in the series of four reports with the WGII assessment on impacts, adaptation and vulnerability scheduled for finalization in March 2014; the WGIII contribution on options for mitigating climate change to be finalized in April 2014, and the AR5 Synthesis Report to be completed in October 2014.

During the four-day meeting, delegates met in plenary, informally and in contact groups to consider the WGI contribution to the IPCC AR5 titled, "Climate Change 2013: The Physical Science Basis." Delegates were assisted by short informal presentations by the Coordinating Lead Authors (CLAs) on various sections and topics of the Summary for Policymakers (SPM). At the end of the meeting, WGI approved the SPM and accepted the underlying report including the Technical Summary and annexes.

Subsequently, the IPCC convened to formally adopt the work by WGI. The approved SPM can be found on the IPCC website <http://ipcc.ch>.

A BRIEF HISTORY OF THE IPCC

The IPCC was established in 1988 by the World Meteorological Organization (WMO) and the UN Environment Programme (UNEP). Its purpose is to assess scientific, technical and socio-economic information relevant to understanding the risks associated with human-induced climate change, its potential impacts, and options for adaptation and mitigation. The IPCC does not undertake new research, nor does it

monitor climate-related data. Instead, it conducts assessments of knowledge on the basis of published and peer-reviewed scientific and technical literature.

The IPCC has three working groups: WGI addresses the scientific aspects of the climate system and climate change; WGII addresses the vulnerability of socio-economic and natural systems to climate change, impacts of climate change and adaptation options; and WGIII addresses options for limiting greenhouse gas (GHG) emissions and mitigating climate change. Each WG has two Co-Chairs and six Vice-Chairs, except WGIII, which, for the Fifth Assessment cycle, has three Co-Chairs. The Co-Chairs guide the WGs in fulfilling the mandates given to them by the Panel and are assisted in this task by Technical Support Units (TSUs).

The IPCC also has a Task Force on National Greenhouse Gas Inventories (TFI). The TFI oversees the IPCC National Greenhouse Gas Inventories Programme, which aims to develop and refine an internationally agreed methodology and software for the calculation and reporting of national GHG emissions and removals, and to encourage the use of this methodology by parties to the UN Framework Convention on Climate Change (UNFCCC).

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The IPCC Bureau is elected by the Panel for the duration of the preparation of an IPCC assessment report (approximately six years). Its role is to assist the IPCC Chair in planning, coordinating and monitoring the work of the IPCC. The Bureau is composed of climate change experts representing all regions. Currently, the Bureau comprises 31 members: the Chair of the IPCC, the Co-Chairs of the three WGs and the Bureau of the TFI (TFB), the IPCC Vice-Chairs, and the Vice-Chairs of the three WGs. In addition to the Bureau, in 2011 the IPCC established an Executive Committee to assist with intersessional work and coordination among WGs. The Committee consists of the IPCC Chair, WG and TFB Co-Chairs, IPCC Vice-Chairs, and advisory members which include the Head of the Secretariat and four Heads of TSUs. The IPCC Secretariat is located in Geneva, Switzerland, and is hosted by the WMO.

IPCC PRODUCTS: Since its inception, the IPCC has prepared a series of comprehensive assessments, special reports and technical papers that provide scientific information on climate change to the international community and that are subject to extensive review by experts and governments.

The IPCC has so far undertaken four comprehensive assessments of climate change, each credited with playing a key role in advancing negotiations under the UNFCCC: the First Assessment Report was completed in 1990; the Second Assessment Report in 1995; the Third Assessment Report in 2001; and the Fourth Assessment Report (AR4) in 2007. In 2008, IPCC-28 decided to undertake a Fifth Assessment Report (AR5) to be completed in 2014.

The Assessment Reports are structured into three volumes, one for each WG. Each volume is comprised of a Summary for Policymakers (SPM), a Technical Summary and an underlying assessment report. All assessment sections of the reports undergo a thorough review process, which takes place in three stages: a first review by experts; a second review by experts and governments; and a third review by governments. Each SPM is approved line-by-line by the respective WG. The Assessment Report also includes a Synthesis Report (SYR), highlighting the most relevant aspects of the three WG reports, and an SPM of the SYR, which is approved line-by-line by the Panel. More than 800 authors and review editors from 85 countries are participating in the preparation of the AR5.

In addition to the comprehensive assessments, the IPCC produces special reports, methodology reports and technical papers, focusing on specific issues related to climate change. Special reports prepared by the IPCC include: Land Use, Land-use Change and Forestry (2000); Carbon Dioxide Capture and Storage (2005); Renewable Energy Sources and Climate Change Mitigation (SRREN) (2011); and, most recently, the Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX) (2011). Technical papers have been prepared on Climate Change and Biodiversity (2002) and on Climate Change and Water (2008), among others.

The IPCC also produces methodology reports or guidelines to assist countries in reporting on GHGs. Good Practice Guidance reports were approved by the Panel in 2000 and 2003. The latest version of the IPCC Guidelines on National Greenhouse Gas Inventories was approved by the Panel in 2006.

For all its work and efforts to “build up and disseminate greater knowledge about manmade climate change, and to lay the foundations that are needed to counteract such change,” the IPCC was awarded the Nobel Peace Prize, jointly with former US Vice President Al Gore, in December 2007.

IPCC-28: This session was held from 9-10 April 2008, in Budapest, Hungary, with discussions centering on the future of the IPCC, including key aspects of its work programme, such as WG structure, type and timing of future reports, and the future structure of the IPCC Bureau and the TFB. The IPCC agreed to prepare the AR5 and to retain the current structure of its WGs. In order to enable significant use of new scenarios in the AR5, the Panel requested the Bureau to ensure delivery of the WGI report by early 2013 and completion of the other WG reports and the SYR at the earliest feasible date in 2014. The Panel also agreed to complete the SRREN Report by 2010.

IPCC-29: This session, which commemorated the IPCC’s 20th anniversary, was held from 31 August to 4 September 2008 in Geneva, Switzerland. At this time, the Panel elected the new IPCC Bureau and the TFB, and re-elected Rajendra Pachauri (India) as IPCC Chair. The Panel also continued discussions on the future of the IPCC and agreed to create a scholarship fund for young climate change scientists from developing countries with the funds from the Nobel Peace Prize. It also asked the Bureau to consider a scoping meeting on the SREX, which took place from 23-26 March 2009 in Oslo, Norway.

IPCC-30: This session was held from 21-23 April 2009 in Antalya, Turkey. At the meeting, the Panel focused mainly on the near-term future of the IPCC and provided guidance for an AR5 scoping meeting, which was held in Venice, Italy, from 13-17 July 2009.

IPCC-31: This session was held from 26-29 October 2009 in Bali, Indonesia. Discussions focused on approving the proposed AR5 chapter outlines developed by participants at the Venice scoping meeting. The Panel also considered progress on the implementation of decisions taken at IPCC-30 regarding the involvement of scientists from developing countries and countries with economies in transition, use of electronic technologies, and the longer-term future of the IPCC.

INTERACADEMY COUNCIL (IAC) REVIEW: In response to public criticism of the IPCC related to inaccuracies in the AR4 and the Panel’s response to the criticism, UN Secretary-General Ban Ki-moon and IPCC Chair Rajendra Pachauri requested the IAC to conduct an independent review of the IPCC processes and procedures and to present recommendations in order to strengthen the IPCC and ensure the quality of its reports. The IAC presented its results in a report in August 2010. The IAC Review made recommendations regarding, *inter alia*: IPCC’s management structure; a communications strategy, including a plan to respond to crises; transparency, including criteria for selecting participants and the type of scientific and technical information to be assessed; and consistency in how the WGs characterize uncertainty.

IPCC-32: This session, held from 11-14 October 2010 in Busan, Republic of Korea, addressed the recommendations of the IAC Review. The Panel adopted a number of decisions in this regard, including on the treatment of grey literature and uncertainty, and on a process to address errors in previous reports. To address recommendations that required further

examination, the Panel established task groups on processes and procedures, communications, Conflict of Interest (COI) policy, and governance and management. The Panel also accepted a revised outline for the AR5 SYR.

SRREN: The eleventh session of WGIII met from 5-8 May 2011 in Abu Dhabi, United Arab Emirates, and endorsed the SRREN and its SPM. Discussions focused, *inter alia*, on chapters addressing sustainable development, biomass and policy. Key findings of the SRREN include that the technical potential for renewable energies is substantially higher than projected future energy demand, and that renewable energies play a crucial role in all mitigation scenarios.

IPCC-33: The session, held from 10-13 May 2011 in Abu Dhabi, United Arab Emirates, focused primarily on follow-up actions to the IAC Review of the IPCC processes and procedures. The Panel decided to establish an Executive Committee, adopted a COI Policy, and introduced several changes to the procedures for IPCC reports. The Panel also endorsed the actions of WGIII in relation to SRREN and its SPM, and considered progress on the AR5.

SREX: The first joint session of IPCC WGs I and II, which took place from 14-17 November 2011 in Kampala, Uganda, accepted the SREX and approved its SPM. The SREX addressed the interaction of climatic, environmental and human factors leading to adverse impacts of climate extremes and disasters, options for managing the risks posed by impacts and disasters, and the important role that non-climatic factors play in determining impacts.

IPCC-34: The meeting, held from 18-19 November 2011 in Kampala, Uganda, focused on follow-up actions to the IAC Review of the IPCC processes and procedures, namely in relation to procedures, COI policy, and communications strategy. The Panel adopted the revised Procedures for the Preparation, Review, Acceptance, Adoption, Approval and Publication of IPCC Reports, as well as the Implementation Procedures and Disclosure Form for the COI Policy. The Panel also formally accepted the SPM of the SREX, which was approved by WGs I and II at their joint meeting held prior to IPCC-34.

IPCC-35: This session took place from 6-9 June 2012 in Geneva, Switzerland. The meeting concluded the Panel's consideration of the recommendations from the IAC Review by approving the functions of the IPCC Secretariat and TSUs, and the Communications Strategy. Delegates also agreed to revisions to the Procedures for the IPCC Reports, and the Procedures for the Election of the IPCC Bureau and Any Task Force Bureau.

WGI-12 REPORT

On Monday morning, WGI Co-Chair Thomas Stocker (Switzerland) opened the session. WGI Co-Chair Qin Dahe (China) said that the latest findings collected in AR5 reflect the most recent understanding of climate change and will be used as a major scientific basis for policy making by governments. He noted that whereas new evidence contains fewer uncertainties than in the past, some still remain.

Co-Chair Stocker said that, having undergone multiple levels of review and scrutiny, AR5 is a reliable and indispensable source of climate science. Noting that science provides frameworks to estimate and not to predict, he said that scenarios envisaging strong mitigation responses can keep global warming

under 1.5°C, whereas other scenarios may make limiting the global temperature rise to 2°C unattainable.

IPCC Chair Pachauri highlighted land, water and their sustainable management as areas the IPCC had not focused on before. He said that 60% of AR5 authors were new to the IPCC process, highlighting the importance of “drawing talent from new quarters.” He said it is essential that the SPM be presented to the nineteenth meeting of the UNFCCC Conference of the Parties (COP 19) in order to facilitate negotiations towards a new agreement in 2015.

Via a video message, WMO Secretary-General Michel Jarraud highlighted that the improved knowledge on anthropogenic contribution to climate change forms the basis for mitigation and adaptation action. Noting the strengthened evidence on temperature increase, sea level rise, glacier melt, and extreme weather events, Jarraud said that the work of WGI is also central to the negotiations towards a climate agreement in 2015. He welcomed the special attention the IPCC has given to the socio-economic aspects of climate change, for example of monsoon rains and El Niño.

Via a video message, UNEP Executive Director Achim Steiner underscored that, while the science keeps evolving, the great challenge of climate change demands new policies in all sectors. In the context of the UNFCCC working towards a new agreement in 2015, Steiner highlighted that the work of the IPCC is important for better understanding both what is happening in the climate system and the benefits of climate action in terms of new jobs, markets and opportunities for the green economy.

Halldór Thorgeirsson, on behalf of UNFCCC Executive Secretary Christiana Figueres, stressed that AR5 goes further to meet the needs of the UNFCCC than previous assessments. He also highlighted the ongoing review process under the UNFCCC of the agreed 2°C upper limit for global temperature rise.

Lena Ek, Minister for the Environment, Sweden, welcomed participants, recalling the 40th anniversary of the International Conference on the Human Environment in Stockholm celebrated in 2012. She underscored that the effects of climate change can already be seen in the Nordic countries, and announced the launch of “The New Climate Economy” initiative on 24 September 2013 in New York.

APPROVAL OF THE SUMMARY FOR POLICYMAKERS

WGI Co-Chair Stocker reminded the Group that 259 authors participated in the preparation of the AR5 WGI report as CLAs, Lead Authors or Review Editors. In the multi-stage review, 1089 experts provided 54,677 comments on the draft text. Co-Chair Stocker highlighted an innovative feature of the AR5 WGI report—an Atlas of Regional and Global Climate Projections—which aims to increase the accessibility of scientific information to users.

The approval of the draft SPM took place mainly in plenary, as delegates reviewed line-by-line the draft revised by Lead Authors in response to comments by governments.

A. INTRODUCTION: This section was addressed on Monday, 23 September. On the first sentence stating that the WGI report considers evidence of past and future climate change based on many independent scientific analyses from observations of the climate system, paleoclimate archives, theoretical studies of climate processes, and simulations using climate models,

Saudi Arabia proposed clarifying that evidence of future climate change is based on models and simulations only. Australia suggested deleting “past and future,” and others agreed.

Concerning the evidence that the key findings of the report are based on, Saudi Arabia suggested adding “assumptions” or “scientific assumptions” to the list. The addition of “scientific assumptions” was supported by Brazil and opposed by Austria, Canada, Germany and Belgium. The latter underscored that assumptions are already implicitly included in the already-listed theory, models and expert judgement. The Group rejected the insertion.

Final Text: This section states that the report builds on the AR4 and incorporates subsequent new findings. It also explains in detail the two approaches taken to communicate uncertainties: one based on confidence level and one on likelihood. In the former, a qualitative level of confidence (from “very low” to “very high”) in the validity of a finding is based on the type, amount, quality and consistency of evidence (e.g., data, mechanistic understanding, theory, models and expert judgment) and the degree of agreement. In the latter, a probabilistic assessment is based on statistical analysis of observations or model results, or both, and expert judgment, and described in levels of quantified likelihood (from “exceptionally unlikely” to “virtually certain”).

B. OBSERVED CHANGES IN THE CLIMATE SYSTEM:

This section was addressed in plenary from Monday to Thursday, with some issues, such as the global temperature increase, also taken up in informal consultations.

On the headline statement, which states that warming of the climate system is unequivocal and, since 1950, many of the observed changes are unprecedented over decades to millennia, Saudi Arabia said the statement was “alarmist,” urged qualifying the terms “unequivocal” and “unprecedented,” requested using the year 1850 instead of 1950, and called for a reference to slowed warming over the past 15 years.

Germany, Australia, Chile, Spain, Fiji, New Zealand, the US, Saint Lucia, Tanzania, Mexico, Slovenia, the UK and others supported the statement as presented, with Germany pointing out that AR4 concluded almost the same. Canada pointed out that factors other than warming will be the emphasis in the future. The Russian Federation proposed “changing,” rather than warming of the climate system. After some discussion, Saudi Arabia agreed to accept the statement as presented.

Atmosphere: Addressing the keynote statement to the subsection, Germany, supported by Belgium and Ireland, argued for an opening sentence singling out the fact that the first decade of the 21st century has been the warmest decade since 1850. The WG Co-Chairs and CLAs suggested focusing on 30-year time periods due to the multi-decadal nature of global warming. Canada proposed adding the word “successively” for the sentence to read that: “Each of the last three decades has been successively warmer at the Earth’s surface than any preceding decade since 1850.” This language was supported by the CLAs, Slovenia, the US, Austria, the Netherlands, New Zealand, and Trinidad and Tobago, and eventually accepted.

Extensive discussion took place throughout the week on text on global temperature increase both in plenary and informal consultations. The text initially referred to both: global mean temperature increase during the period 1901-2012, and

temperature change between 1850-1900 and 1986-2005. Debate revolved around, *inter alia*: reference years used; whether to discuss these two concepts in a single bullet point, which, some said, would lead to confusion among policy makers; placement of text on temperature change; and use of the term “pre-industrial.” The US cautioned against mixing information from trends with information from differences between time periods, and suggested two separate bullet points. While some countries called for using the period 1850-1900, the CLAs clarified regional trends were sparse prior to 1901, and noted the availability of three datasets for the period 1880-2012, and one going back to 1850 for global temperature.

On temperature change between 1850-1900 and 1986-2005, Canada, supported by Belgium and the US, proposed providing context for the two time periods, referring to the former as the early instrumental period, and the latter as the AR5 reference period used for projections. Delegates debated at length whether to place this text in the observations or in the projections section. Delegates also discussed whether to use the term “pre-industrial” for the period 1850-1900, with some countries suggesting this would lead to confusion as in other places, “pre-industrial” refers to 1750.

After a series of informal consultations, compromise text was introduced, which included two bullet points in the observations section, one relating to a linear trend in global temperature increase of 0.85°C over the period 1880 and 2012, when multiple datasets exist, and another, on regional trends for 1901-2012. The group also agreed to insert text into the chapeau of the section on future climate change, which, among other things, clarifies that considering observed changes between different periods is necessary to place projections in historical context.

On lower rates of warming in the last 15 years, there was broad agreement on the underlying science as well as on the importance of addressing the phenomenon in the SPM, given the media attention to this issue. A lengthy discussion occurred regarding how to communicate the underlying scientific explanation clearly and in an accessible manner to policy makers to avoid sending a misleading message.

Germany, supported by Belgium, Luxembourg and others, suggested adding that the rates of warming were higher in the preceding 15-year period. Norway noted that only periods of 30 years are sufficient to draw conclusions about rates of temperature change as defined in the glossary of the report. The US, with Belgium, Luxembourg and others, proposed adding that the rate of warming since the late 1990s is very sensitive to the choice of a start year, referring to a strong El Niño effect in 1997-1998. The latter suggestion was taken on board in a slightly modified form.

The US, with Brazil, further suggested adding actual estimates of the rate of warming for 15-year periods using different starting years, to which a CLA responded that this was not evaluated in the underlying assessment. During informal consultations, CLAs did calculations in response to the suggestion by the US, and a related footnote was subsequently approved by the WG noting that “trends for 15-year periods starting in 1995, 1996 and 1997 are 0.13 (uncertainty interval: 0.02 to 0.24), 0.14 (0.03 to 0.24), and 0.07 (-0.02 to 0.18) °C per decade, respectively.”

Concerning text on the Medieval Climate Anomaly, Belgium and Ireland underscored that this phenomenon was regional in nature, unlike global warming in late 20th century, and suggested clarifying language to reflect this. Canada, supported by Norway, raised the issue of the Arctic experiencing a greater increase in surface temperature than globally, and text on this was introduced in other parts of the SPM.

On the troposphere, discussion focused on the need to clarify that more complete observations are available in the Northern Hemisphere extra-tropical troposphere than elsewhere else.

On precipitation, the discussion mainly centred around the question whether the text should focus on the Northern Hemisphere only. Guinea, Tanzania, Madagascar, Malawi, Peru, Trinidad and Tobago, and the Philippines highlighted the need to mention the Southern Hemisphere as well, since precipitation is an important issue for policy makers there. Mali underlined the importance of rain-based agriculture; Ethiopia highlighted droughts and floods that have occurred due to precipitation variability; and the Comoros stressed the special vulnerability of island states. A contact group developed a compromise to include two additional maps that show the changes in precipitation in 1901-2010 and 1951-2010.

Concerning extreme weather events, the US expressed concern over aggregating increased changes in heavy precipitation events in North America at a continental level despite “dramatic differences” within North America, but the Group agreed to retain extreme weather events on a continental scale in the text, while addressing regional variations in Table SPM.1.

Ocean: This sub-section was approved with minor changes.

Cryosphere: On the keynote message, many delegations identified the need to underscore the accelerating loss of ice mass in Greenland and Antarctica. However, the WG opted for a more conservative approach due to the relatively short records on ice masses, which began with satellite observations in the early 1990s, and the pressing need to make the key messages “absolutely water-tight.” Some delegations also suggested adding a sentence on the regional Antarctic sea ice extension, but this was abandoned due to less consistent observations and large natural variability.

On observed changes in the cryosphere, delegates discussed: the inclusion of peripheral glaciers in ice sheet melting; the amount of contextual information in the text; metrics; and the need for different time periods for observing the atmosphere and cryosphere.

On the text on the extent of Arctic sea ice, the UK asked about changes in Arctic sea ice thickness and the US about summer sea ice extent, to which the CLAs replied that this information is discussed in detail in the underlying assessment.

In the context of loss of permafrost and ice mass, delegates discussed whether to refer to changes as “significant,” with a statistical meaning, or “considerable,” to put numbers in the right context. Delegates agreed to include new text on multiple lines of evidence supporting very substantial Arctic warming since the mid-20th century.

A footnote was included stating that the assessment of ice loss from the Antarctic and Greenland ice sheets includes change in peripheral glaciers, which is excluded from values given for glaciers.

Sea Level: Delegates included new text on the timeframe indicating: a transition in the late 19th to early 20th century from relatively low mean rates of rise over the previous two millennia to higher rates (“*high confidence*”); and that the rate of global mean sea level rise has “*likely*” (66-100% probability) continued to increase since the early 20th century.

On the global mean sea level rise during the last interglacial period (129,000 to 116,000 years ago), the UK, Austria, US, Germany and others supported providing a policy relevant context and linking paleoclimatic observations on sea level rise to temperature. To avoid confusing policy makers, China and Japan opposed causally linking sea level rise to specific temperature levels, explaining that mechanisms affecting sea level rise in pre-industrial times were different. Following extensive discussions and consultations with CLAs, participants agreed on text stating this change in the sea level occurred in the context of different orbital forcing and with high-latitude surface temperature, averaged over several thousand years, at least 2°C warmer than present (“*high confidence*”).

Carbon and Other Biochemical Cycles: On the headline statement in this section, Brazil insisted on nuancing the relative contribution of land-use change to the increase of CO₂ concentrations, and including reference to the role of forests as sinks, with Venezuela proposing to refer to the net balance between emissions and carbon capture by land systems. The US suggested adding terrestrial sinks, and mentioning that the increase in CO₂ concentrations is “secondarily” from land use change, while Norway stated that it would not be appropriate to mention terrestrial sinks here. Saudi Arabia and Venezuela underlined the importance of referring, in the headline statement, to all three GHGs, namely CO₂, methane, and nitrous oxide. Informal consultations took place on the reference to the role of terrestrial sinks, after which the headline statement was adopted.

Addressing the atmospheric concentrations of GHGs, Saudi Arabia cautioned against “giving policy makers the message that CO₂ drives global warming” and further highlighted that not all CO₂ emissions result from fossil fuel combustion. Many delegates attempted to clarify and simplify language, while Argentina urged participants to “save energy for more controversial chapters.”

Regarding text on CO₂ emissions from fossil fuel combustion and cement production in 2011, and anthropogenic net CO₂ emissions from land-use change throughout the past decade, Saudi Arabia proposed also discussing other gases, sectors and sources, and addressing confidence levels and representative timeframes. On the use of different timeframes, the CLAs clarified that for industries, yearly data is available, while for land-use change, available data is not updated every year. Following informal consultations, delegates agreed to revised text incorporating a number of these suggestions.

Final Text: The headline messages of the section state that warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. It further states that the atmosphere and oceans have warmed, the amounts of snow and ice have diminished, sea level has risen, and GHG concentrations have increased.

The SPM also says that each of the last three decades has been successively warmer at the Earth’s surface than any preceding

decade since 1850 and that in the Northern Hemisphere, 1983-2012 was “likely” (66-100% probability) the warmest 30-year period of the last 1400 years (“medium confidence”). Referring to lower rates of warming over 1998-2012, the text notes that trends based on short records are, due to natural variability, very sensitive to the beginning and end dates, and do not reflect long-term climate trends.

Over the last two decades, the Greenland and Antarctic ice sheets have been losing mass, glaciers have continued to shrink almost worldwide, and Arctic sea ice and Northern Hemisphere spring snow cover have continued to decrease in extent (“high confidence”).

The atmospheric concentrations of CO₂, methane and nitrous oxide have increased to levels unprecedented in at least the last 800,000 years, and CO₂ concentrations have increased by 40% since pre-industrial times, primarily from fossil fuel emissions and secondarily from net land-use change emissions.

C. DRIVERS OF CLIMATE CHANGE: This section was taken up in plenary on Wednesday when a contact group was formed, co-chaired by Arthur Rolle (Bahamas) and Jean-Pascal van Ypersele (Belgium). The contact group discussed, among other issues: the difference between radiative forcing and effective radiative forcing; the difference between concentration-based and emission-based approaches to the reporting of radiative forcing; comparability of the analyses in AR4 and AR5; and accessibility of the text to policy makers. Delegates also addressed the appropriateness of Figure SPM.5, since it does not present uncertainties for individual components, and the figure was slightly amended to reflect this. The text agreed by the contact group was discussed by the WG on Thursday when van Ypersele explained that, although both concentration-based and emission-based approaches to reporting radiative forcing are used in the SPM, the latter are emphasized. The WG then approved the section in its entirety.

Final Text: The section’s headline message states that total radiative forcing is positive and has led to an uptake of energy by the climate system, and that the largest contribution to total radiative forcing is caused by the increase in the atmospheric concentration of CO₂ since 1750.

D. UNDERSTANDING THE CLIMATE SYSTEM AND ITS RECENT CHANGES: This section was addressed in plenary on Wednesday and Thursday with some issues also taken up in informal groups.

Evaluation of Climate Models: Participants debated extensively the text dealing with simulated and observed trends in global mean surface temperature in the long and short term. Co-Chair Stocker emphasized the need to address discussions currently taking place among policy makers regarding the past 10-15 years and said that “now is the time for the IPCC to make a statement to the outside world.” The US said that a period of 10-15 years is too short for model evaluation. The most contentious point concerned differences between simulated and observed short-term trends. The US, Austria, Saudi Arabia, the Russian Federation, Germany, Belgium and others supported reference to 10-15-year periods in general. China maintained that reference should only be made to the past 15 years. Informal consultations did not result in agreement, and the Co-Chair proposed, and China accepted, a compromise to include in parenthesis “e.g., 1998-2012.”

On the explanation of the observed reduction in the surface warming trend over the period 1998-2012, Saudi Arabia strongly urged incorporating language from the Technical Summary on models overestimating the warming trend. The CLAs advised against including this statement in the SPM, noting that: the research is currently inconclusive; overestimation of the models is too small to explain the overall effect and not statistically significant; and it is difficult to pinpoint the role of changes in radiative forcing in causing the reduced warming trend, with Co-Chair Stocker referring to this issue as an “emerging science topic.”

Switzerland proposed including the language suggested by Saudi Arabia, together with an explanation of the level of confidence. Germany questioned the adequacy of that language. The suggestion by Saudi Arabia was incorporated in the SPM text.

On Thursday morning, Germany and the UK said that their objections were not noted the previous evening when a sentence on overestimates in some models introduced by Saudi Arabia was adopted. Saudi Arabia, supported by Sudan, expressed grave concerns in opening up agreed text, emphasizing that “we are in dangerous waters,” while Sudan added that opening up agreed text raises the issue of equal treatment of countries. No changes were made to the text.

Quantification of Climate System Responses: On equilibrium climate sensitivity, several delegations, including Australia, the Netherlands and others, noted that the message that the lower limit of the assessed “likely” range of climate sensitivity is less than the 2°C in the AR4 can be confusing to policy makers and suggested noting it is the same as in previous assessments. The CLAs explained that comparison to each of the previous IPCC assessments would be difficult, and new language was developed adding that the upper limit of the assessed range is the same as in AR4.

On GHG metrics, the text was endorsed by Austria, the Netherlands, Slovenia and New Zealand, and opposed by Brazil, who called for informal consultations, explaining this was one of the most important issues in AR5 for his delegation due to different policy implications of the choice between Global Warming Potential and Global Temperature Potential as a metric. A revised text was developed by an informal group and accepted approved by the WG.

Detection and Attribution of Climate Change: In drafting the keynote message, the UK suggested adding a sentence that explicitly notes increased evidence of anthropogenic influence since the AR4. This was supported, with several different wording suggestions, by Slovenia, Switzerland, Canada, Fiji, Saint Lucia and Germany, and opposed by Saudi Arabia. A contact group developed a proposal that included text suggested by the UK.

Canada proposed including Arctic warming in the context of explaining warming of continental regions, and additional language was developed.

Final Text: The headline message to this section states that human influence on the climate system is clear as it is evident from the increasing GHG concentrations in the atmosphere, positive radiative forcing, observed warming, and understanding of the climate system. The text notes that climate models have improved since AR4. It also says that human influence has been

detected in: warming of the atmosphere and the ocean; changes in the global water cycle; reductions in snow and ice; global mean sea level rise; and changes in some climate extremes. According to the report, the “evidence for human influence has grown since AR4” and “it is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century,” with extremely likely referring to a 95–100% probability.

E. FUTURE GLOBAL AND REGIONAL CLIMATE

CHANGE: This section was taken up in plenary on Thursday, with some issues also discussed in informal meetings.

New text was added by delegates to the chapeau of this section as a result of related discussions on global temperature increase under the section “Observed changes in the climate system.” This text clarifies that: considering observed changes between different periods is necessary to place projections in historical context; the observed change between the average of the period 1850-1900 and of the AR5 reference period is 0.61°C with the probability range from 0.55 to 0.67; and warming has occurred beyond the average of the AR5 reference period.

Atmosphere: Temperature: Delegates engaged in a lengthy discussion over how to refer to the “pre-industrial period,” which is defined in the glossary as taking place before 1750, whereas in many cases the data is limited to the period 1850-1900. China suggested changing “pre-industrial” to “1850-1900,” while the EU and Belgium underscored that “pre-industrial” is an important word used by policy makers. The US and Canada suggested solving the issue by adding language on using 1850-1900 as a proxy for “pre-industrial.” A contact group developed a proposal, in which reference to “pre-industrial” is deleted, and this was adopted.

Atmosphere: Water Cycle: Discussion took place on changes in annual mean precipitation under the Representative Concentration Pathway (RCP) 8.5 scenario, one of the four scenarios used in the AR5 as explained in Box SPM.1. Sweden and the UK asked why only the RCP8.5 scenario was used, with the CLAs responding that changes in internal natural variability may not be as significant, and likelihood statements cannot be made for other scenarios.

On extreme precipitation events over mid-latitude landmass and wet tropical regions becoming more intense and frequent, the CLAs clarified that the assessment was based on more than the RCPs, and that the conclusion was generally true for all these regions. Noting more frequent and extreme rainfall in the Sahel, Mali asked why dry regions were not mentioned, to which the CLAs responded that, because of natural variability, the same statement could not be made for dry regions.

Atmosphere: Air Quality: This sub-section was adopted with no changes.

Ocean: The sub-section was adopted with minor amendments.

Cryosphere: Projections on developments in the cryosphere inspired interventions, during which delegates questioned the CLAs about levels of certainty, models and the utilization of different scenarios. Many delegates, including Canada, Norway, UK, France, Japan, the Russian Federation, Denmark and Slovenia, engaged with the CLAs in drafting more precise language that would less likely be interpreted as “alarmist.” The Russian Federation highlighted the need to express clearly that all results in the keynote message were based on scenarios, but

agreed to support the text after clarification by the CLAs that RCP scenarios were mentioned in the chapeau of the chapter.

Sea Level: On the basis for higher projections of global mean sea level rise in the 21st century, Germany queried why an upper boundary “of what is physically possible” has not been indicated, to which the CLAs responded that there was no scientific basis for providing this information since there were no probability levels available.

Carbon and Other Biochemical Cycles: On cumulative fossil fuel emissions for the 2012-2100 period, China, Kenya and Venezuela, opposed by Germany, said presenting figures for the means together with the ranges created confusion. The US and Saudi Arabia suggested using CO2 equivalent as opposed to CO2. An informal consultation group was established, which was later transformed into a formal contact group, co-chaired by Nicolas Beriot (France) and Elisabeth Holland (Fiji). The text proposed by the group, and adopted by the WG, references ranges for cumulative CO2 emissions for the 2012-2100 period compatible with the RCP atmospheric CO2 concentrations, as derived from 15 Earth System Models. The group also proposed adding Table SPM.3 with the cumulative CO2 emissions, which was adopted by the WG.

On the text originally stating that following RCP2.6 requires by 2050 an average emission reduction of 50% relative to 1990, Germany, supported by Slovenia and Belgium, proposed adding figures for beyond 2050, for example for 2080. China stressed that it has the same concerns here as on the discussion on cumulative fossil fuel emissions and suggested inserting information on all RCPs. Saudi Arabia proposed deleting the entire text, with the Russian Federation expressing understanding for the concerns raised. The issue was taken up in the same contact group as on cumulative fossil fuel emissions. The group developed a proposal later adopted by the WG, which states that by 2050, annual CO2 emissions derived from Earth System Models following RCP2.6, a mitigation scenario, are smaller than 1990 emissions, and that by the end of the 21st century, about half of the models infer emissions slightly above zero, while the other half infer a net removal of CO2 from the atmosphere.

Climate Stabilization, Climate Change Commitment and Irreversibility: On the relationship between cumulative total emissions of CO2 and global mean surface temperature change, China, Saudi Arabia and India expressed difficulties understanding that this relationship is linear, with China, supported by Saudi Arabia, suggesting referring to “positively correlated” instead of “approximately linear.” The UK and Ireland expressed support for the original text. China and the US, supported by Saudi Arabia, suggested referring to “level” or “range” instead of “target” for warming and emissions. The CLAs suggested referring to global mean surface temperature “response” instead of “change.”

Regarding text stating that limiting warming from anthropogenic CO2 emissions alone to *likely* less than 2°C since 1861-1880 requires cumulative emissions to stay below 1000 gigatonnes of carbon (GtC), Saudi Arabia urged using 1850 for consistency, to which the CLAs responded that some model simulations only begin in 1860, which delegates agreed to reflect in a footnote. Delegates diverged on the proposal to use a range of 0-1000. Japan questioned use of “likely,” with the CLAs

suggesting to qualify it with reference to a probability of 66% or more. The US cautioned against using language that could be interpreted as policy prescriptive. An informal group was tasked with looking at this matter, as well as text on a lower warming target.

Following these informal discussions, delegates agreed on text stating that limiting the warming caused by anthropogenic CO₂ emissions alone with a probability range of greater than 33%, 50%, and 66%, to less than 2°C since the period 1861-1880, will require cumulative CO₂ emissions from all anthropogenic sources to stay between 0 and about 1560 GtC, 0 and about 1210 GtC, and 0 and about 1000 GtC. A number of delegates agreed this text was more policy-neutral.

On the text on a large fraction of climate change being irreversible on a multi-century to millennial time scale, the Russian Federation observed that global warming was reversible as opposed to CO₂ concentrations in the atmosphere that were not. The text was adopted with minor textual clarifications.

Final Text: The headline message to the section states that continued GHG emissions will cause further warming and changes in all components of the climate system, and that limiting climate change will require substantial and sustained reductions of GHG emissions. Other main messages include information on: global surface temperature change by the end of 21st century under various RCP scenarios with the uncertainty levels attached; and projected changes in the global water cycle, precipitation, air quality, the global ocean, the Arctic, the Antarctic, sea level rise, and the carbon cycle. The text also states that cumulative CO₂ emissions largely determine global mean surface warming by the late 21st century and beyond, and that most aspects of climate change will persist for many centuries even if CO₂ emissions stop.

UNDERLYING SCIENTIFIC AND TECHNICAL ASSESSMENT

The underlying assessment was accepted by WGI without discussion.

CLOSING OF WGI-12

In the closing remarks, the WGI Co-Chairs thanked delegates, authors, the WGI TSU, the host country, translators, the Bureau, and others for their dedication and great work. The WGI session closed at 8:12 am on Friday, 27 September.

IPCC-36 REPORT

IPCC Chair Pachauri opened the 36th session of the IPCC immediately after the closing of WGI-12.

DRAFT REPORT OF IPCC-35

Renate Christ, Secretary of the IPCC, reminded delegates that the revised report of IPCC-35 had been circulated with incorporated changes suggested by members of the Panel (IPCC-XXXVI/Doc. 2). The report was approved by the Panel.

ACCEPTANCE OF THE ACTIONS TAKEN AT WGI-12

The Republic of Korea opposed reference to the “Sea of Japan” in the underlying assessment, noting that the issue is contested and that the IPCC language should remain neutral, while Japan said “Sea of Japan” is a standard geographical term. The Republic of Korea expressed his wish to resolve the issue

before the IPCC-36 report. IPCC Chair Pachauri assured that the remarks and concerns of the Republic of Korea and Japan have been recorded, noting that the issue goes beyond the Panel’s competence.

The Panel then accepted the actions of WGI-12 with regard to the approval of the AR5 WGI SPM and the acceptance of its underlying scientific and technical assessment.

TIME AND PLACE OF THE NEXT SESSION

The next IPCC meeting will take place in Batumi, Georgia, from 14-18 October 2013.

CLOSING OF IPCC-36

IPCC Chair Pachauri declared the meeting closed at 8:46 am on Friday, 27 September.

A BRIEF ANALYSIS OF THE IPCC MEETINGS

NORDIC SUNRISE: THE IPCC’S STOCKHOLM MEETING

In the dim light of the Nordic morning, in a picturesque post-industrial location in central Stockholm, the IPCC adopted the latest findings on the science of climate change. Over four days and nights, the overview of these conclusions—the Summary for Policymakers—had been subject to intense line-by-line discussion by representatives of 116 governments present in Stockholm. The WGI contribution is the first in a series of four that will comprise the Fifth Assessment Report. The other three are the WGII assessment on impacts, adaptation and vulnerability (scheduled for endorsement in March 2014), the WGIII contribution on options for mitigating climate change (April 2014), and the Synthesis Report (October 2014). The Fifth Assessment Report will provide the scientific basis for future global climate policy, including the new agreement that is supposed to be adopted by parties to the UNFCCC in 2015.

This brief analysis summarizes the main findings of the report, reflects on the SPM approval process, and places the meeting in the larger context of evolving global climate policy.

THE LATEST IN CLIMATE SCIENCE: HALFWAY THROUGH THE “CARBON BUDGET”?

During the press conference at the end of the meeting, UN Secretary-General Ban Ki-moon described the WGI report as “the world’s best science for the world’s biggest challenge.” While reactions to the WGI report were mixed and some commented that “the AR5 doesn’t pack the same punch as the AR4,” several key messages in the report stand out due to stronger scientific evidence, increased certainty and/or new findings.

It is now clearer than ever that human influence is affecting the climate system, with the certainty of anthropogenic climate change increased from 90% in the AR4 to 95% in the AR5. Atmospheric concentrations of CO₂, methane and nitrous oxide have increased to “unprecedented” levels in at least the last 800,000 years. CO₂ concentrations have increased by 40% since pre-industrial times and this was primarily due to fossil fuel emissions and secondarily due to net land use change emissions.

The WGI report also reflects on: major changes in the Arctic and Antarctic, including on an ice-free Arctic in the summer; increased weather and climate extreme events; ocean

acidification; and more scientifically robust, higher projections of sea level rise compared to AR4.

The WGI report is based on a new type of scenarios of future anthropogenic emissions called Representative Concentration Pathways (RCPs), which include a mitigation scenario leading to a very low climate forcing, two stabilization scenarios and one scenario with very high GHG emissions. The Summary for Policymakers thus contains clearer, more policy relevant information on what will happen under different climate policy choices. Importantly, the report also provides information on temperature implications of cumulative total CO₂ emissions. Limiting the warming to less than 2°C can be achieved, with a probability level of 66%, if maximum cumulative CO₂ emissions do not exceed 1000 GtC. According to the Panel, 531 GtC was already emitted by 2011. This means that the remaining “carbon budget” for the world is limited to 469 GtC.

The Summary for Policymakers also incorporates, for the first time, information on, *inter alia*, paleoclimate reconstruction studies, geoengineering, and an emissions-based perspective on drivers of climate change.

Summarizing the report’s main message, UNEP Executive Director Achim Steiner stated in the concluding press conference, “You may not know everything, but you will know enough about the risks of not acting.”

COMMUNICATING CLIMATE SCIENCE BY MORE THAN A HUNDRED STATES

Reaching agreement on any report with so many cooks in the kitchen is not an easy task, especially if the text is filled with complex technical information and reviewed line-by-line by an intergovernmental body in a plenary setting. Yet, the mood was highly constructive, with genuine will to describe the big picture of global climate change to policymakers in a clear and readable report. However, some political disagreements did surface during these discussions with Saudi Arabia trying to mute the tone of the scientific findings by tirelessly stressing uncertainties throughout the meeting. There were other clear linkages to the ongoing UNFCCC negotiations in the discussions, for instance on: what period can be referred to as “pre-industrial,” how to describe the qualities of such metrics as Global Warming Potential and Global Temperature Potential, and how to address the implications of RCP scenarios in the context of staying below 2°C of warming or a lower warming target.

The allegations of climate skeptics of a global warming slowdown in the popular media had some bearing on the emphasis placed on communicating the messages of the SPM. Many delegations highlighted the possibility of climate skeptics misrepresenting, or “cynically” taking sentences out of context. This in turn led to extra-careful deliberations and some time-consuming wordsmithing around the key findings. Delegates debated at length to find the clearest language possible to explain that a claimed “15-year hiatus” is based on a single variable (global mean surface temperature), too short a period of observation for climatic significance, and sensitive to the choice of the starting year from which a 15-year period is calculated.

The IPCC entered its final stage of the Fifth Assessment with quite a few internal changes. In the last three years the Panel has responded to the recommendations from the independent review by the InterAcademy Council, which was launched in the

aftermath of controversies surrounding the Fourth Assessment Report and introduced significant changes to its governance and procedures. A question thus arises as to how the recent reforms of the IPCC affected the meeting’s approval of the first part of the AR5. The reforms have made the IPCC a stronger and more solid institution, with a more robust review process and more consistent language on uncertainties. It seems evident that the Panel became more transparent and responsive in the run up to the Stockholm meeting. The communications have also been strengthened with a new communications unit, a related strategy, and media trainings for authors. Other changes, including a procedure to address possible errors in the assessment, will, however, have to withstand the test of time with much scrutiny and a plethora of questions to come.

SETTING THE STAGE FOR A PARIS AGREEMENT?

With less than two months to go before UNFCCC COP 19 opens in Warsaw, and the UN Secretary-General planning to host a Climate Summit with world leaders in September 2014, the WGI contribution to AR5 is well-timed to influence global climate policy. The SPM and the WGI report provides the much needed scientific guidance to climate negotiators both in the international negotiations and in domestic contexts.

Seasoned negotiators remember how the AR4 re-energized the UNFCCC climate negotiations in 2006 and 2007. Given the increased levels of certainty regarding human-induced global warming (from 90 to 95%), more robust projections on sea-level rise and data on melting of ice sheets, and the “carbon budget” for staying below the 2°C target, the WGI conclusions together with other AR5 component reports are likely to put more pressure on the UNFCCC parties to deliver by 2015 an ambitious agreement that is capable of preventing dangerous anthropogenic interference with the climate system.

UPCOMING MEETINGS

Convention for Biological Diversity (CBD) SBSTTA 17:

The 17th meeting of the Subsidiary Body on Scientific, Technical and Technological Advice is expected to address, among others, issues related to marine and coastal biodiversity, biodiversity and climate change, and collaboration with the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES).

dates: 14-18 October 2013 **location:** Montreal, Canada
contact: CBD Secretariat **phone:** +1-514-288-2220 **fax:** +1-514-288-6588 **email:** secretariat@cbd.int **www:** <http://www.cbd.int/doc/?meeting=SBSTTA-17>

IPCC-37: IPCC 37 will consider two methodology reports: the “2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands”; and the good practice guidance on estimating GHG emissions and removals from land use, land-use change and forestry under the Kyoto Protocol.

dates: 14-18 October 2013 **location:** Batumi, Georgia **contact:** IPCC Secretariat **phone:** +41-22-730-8208 **fax:** +41-22-730-8025 **email:** IPCC-Sec@wmo.int **www:** <http://www.ipcc.ch/>

Africa Climate Conference 2013: Convened by the World Climate Research Programme and the African Climate Policy Center, the Africa Climate Conference 2013 will bring together stakeholders to identify the state of knowledge on the African

climate system. **dates:** 15-18 October 2013 **location:** Arusha, Tanzania **contact:** Seleshi Bekele **email:** acc2013@climdev-africa.org **www:** <http://www.climdev-africa.org/acc2013>

25th Meeting of the Parties (MOP) to the Montreal Protocol: MOP 25 is scheduled to consider a number of issues, including nominations for critical- and essential-use exemptions and climate benefit of the accelerated phase-out of hydrochlorofluorocarbons and phasing down hydrofluorocarbons. **dates:** 21-25 October 2013 **location:** Bangkok, Thailand **contact:** Ozone Secretariat **phone:** +254-20-762-3851 **fax:** +254-20-762-4691 **email:** ozoneinfo@unep.org **www:** <http://ozone.unep.org>

19th Session of the Conference of the Parties to the UNFCCC: COP 19, CMP 9, ADP 3, SBSTA 39, and SBI 39 will convene in Warsaw, Poland. **dates:** 11-22 November 2013 **location:** Warsaw, Poland **contact:** UNFCCC Secretariat **phone:** +49-228-815-1000 **fax:** +49-228-815-1999 **email:** secretariat@unfccc.int **www:** <http://www.unfccc.int>

International Conference on Climate Change, Water and Disaster in Mountainous Areas: This conference is organized by the Society of Hydrologists and Meteorologists, SOHAM-Nepal. It will focus on climate change, water and disaster in mountainous areas. **dates:** 27-29 November 2013 **location:** Kathmandu, Nepal **contact:** Mr. Deepak Paudel, SOHAM Nepal **phone:** +977-9841647398 **email:** sohamconference2013@gmail.com **www:** <http://www.soham.org.np/pdf/international-conference.pdf>

IPCC WG II 10th Session and IPCC-38: IPCC WGII will meet for approval and acceptance of the WGII contribution to AR5. WGII assesses the vulnerability of socio-economic and natural systems to climate change, negative and positive consequences of climate change, and options for adapting to it. Subsequently, IPCC-38 will convene to endorse the WGII contribution to AR5. **dates:** 25-29 March 2014 **location:** Yokohama, Japan **contact:** IPCC Secretariat **phone:** +41-22-730-8208 **fax:** +41-22-730-8025 **email:** IPCC-Sec@wmo.int **www:** <http://www.ipcc.ch/>

IPCC WG III 12th Session and IPCC-39: IPCC WGIII will meet for approval and acceptance of the WG III contribution to AR5. WG III focuses on mitigation of climate change. Subsequently, IPCC-39 will convene to endorse the WGIII report. **dates:** 7-13 April 2014 **location:** Berlin, Germany **contact:** IPCC Secretariat **phone:** +41-22-730-8208 **fax:** +41-22-730-8025 **email:** IPCC-Sec@wmo.int **www:** <http://www.ipcc.ch/>

Third International Climate Change Adaptation Conference: The Conference titled "Adaptation Futures 2014" will be the nexus between the research community and the users of climate change adaptation information at regional and global scale. **dates:** 12-16 May 2014 **location:** Fortaleza, Brazil **contact:** Provia Secretariat, UNEP **email:** adaptationfutures2014@inpe.br **www:** <http://adaptationfutures2014.ccst.inpe.br/>

UNFCCC 40th Sessions of the Subsidiary Bodies: SBI 40 and SBSTA 40 are expected to take place in June 2014. **dates:** 4-15 June 2014 **location:** Bonn, Germany **contact:** UNFCCC Secretariat **phone:** +49-228 815-1000 **fax:** +49-228-815-1999 **email:** secretariat@unfccc.int **www:** <http://www.unfccc.int>

CBD SBSTTA 18: At its 18th meeting, the CBD SBSTTA is expected to address, among others, issues related to marine and coastal biodiversity, biodiversity and climate change, and the relationship with IPBES. **dates:** 23-27 June 2014 (tentative) **location:** Montreal, Canada (tentative) **contact:** CBD Secretariat **phone:** +1-514-288-2220 **fax:** +1-514-288-6588 **email:** secretariat@cbd.int **www:** <http://www.cbd.int/meetings/>

CBD COP 12: CBD COP 12 will engage in a mid-term review of the implementation of the Strategic Plan and the Aichi targets. The theme of the meeting will be "Biodiversity for Sustainable Development." The Meeting of the Parties to the Cartagena Protocol on Biosafety will take place immediately before COP 12. **dates:** 6-17 October 2014 **location:** Pyeongchang, Republic of Korea, **contact:** CBD Secretariat **phone:** +1-514-288-2220 **fax:** +1-514-288-6588 **email:** secretariat@cbd.int **www:** <http://bch.cbd.int/protocol/edoc/?notification=2036>

IPCC-40: This IPCC meeting will be held to adopt AR5 SYR and approve its SPM. Subsequently, in December 2014, a copy of the SYR will be presented to the UNFCCC COP 20. **dates:** 27-31 October 2014 **location:** Copenhagen, Denmark **contact:** IPCC Secretariat **phone:** +41-22-730-8208 **fax:** +41-22-730-8025 **email:** IPCC-Sec@wmo.int **www:** <http://www.ipcc.ch/>

For additional meetings and updates, go to <http://climate-l.iisd.org/>.

GLOSSARY

AR5	Fifth Assessment Report
AR4	Fourth Assessment Report
CLA	Coordinating Lead Author
CO2	Carbon dioxide
COI	Conflict of Interest
COP	Conference of the Parties
GHG	Greenhouse gas
GtC	Gigatonne of carbon
IAC	InterAcademy Council
IPCC	Intergovernmental Panel on Climate Change
RCP	Representative Concentration Pathway
SPM	Summary for Policymakers
SREX	Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation
SRREN	Special Report on Renewable Energy Sources and Climate Change Mitigation
SYR	Synthesis Report
TFB	TFI Bureau
TFI	Task Force on National Greenhouse Gas Inventories
TSU	Technical Support Unit
UNEP	United Nations Environment Programme
UNFCCC	UN Framework Convention on Climate Change
WG	Working Group
WMO	World Meteorological Organization