



WORLD CLIMATE PROGRAMME

WORLD CLIMATE APPLICATIONS AND SERVICES PROGRAMME

MEETING OF THE COMMISSION FOR CLIMATOLOGY TASK TEAM ON GLOBAL SEASONAL CLIMATE UPDATES

15 October 2010, Geneva, Switzerland

FINAL REPORT

WORLD METEOROLOGICAL ORGANIZATION
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- World Climate Research Programme (WCRP)
- World Climate Data and Monitoring Programme (WCDMP)
- World Climate Applications and Services Programme (WCASP)
- World Climate Impact Assessment and Response Strategies Programme (WCIRP)

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1. OPENING

The meeting of the CCI Task Team on Global Seasonal Climate Updates (TT/GSCU) was opened by its co-chair, Mr Richard Graham (UK), at 9:00 on Friday, 15 October 2010, at WMO Headquarters in Geneva/Switzerland. The co-chair informed the Task Team that its chair, Mr Won-Tae Yun (Korea) was unable to attend the meeting due to other pressing commitments. Furthermore, Mr Graham noted that the Task Team meeting was organised back-to-back to the Expert Meeting on Scoping Global Seasonal Climate Updates (12-14 October 2010, WMO Headquarters, Geneva/Switzerland) to allow for immediate review and discussion of the expert meeting's recommendations in order to organise the Task Team's work accordingly.

Mr Jean-Pierre Céron, co-chair of the CCI OPACE 3, reminded the Task Team that it can invite further experts as appropriate to support its work.

2. ORGANISATION OF THE MEETING

Adoption of the agenda

The Team adopted the provisional agenda without any change, as provided in Annex I to this report.

Working arrangements

The Team agreed its hours of work and other practical arrangements for the meeting. The list of participants in the meeting is provided in Annex II to this report.

3. INTRODUCTION: CONTEXT FOR, AND TERMS OF REFERENCE OF, THE TASK TEAM ON GLOBAL SEASONAL CLIMATE UPDATES

The Team was presented with the structure and working mechanisms of WMO's Commission for Climatology (http://www.wmo.int/pages/prog/wcp/ccl/index_en.html). The Team then reviewed and discussed its Terms of Reference (ToRs) (<http://www.wmo.int/pages/prog/wcp/wcasp/CCI-TT-GSCU.html>) and proposed some modifications in light of the recommendations provided by the preceding Expert Meeting on Scoping GSCU.

Action 1

WMO Secretariat to work with the chair and co-chair of the Task Team on GSCU to finalise its ToRs accordingly.

4. OUTCOME OF THE EXPERT MEETING ON SCOPING GLOBAL SEASONAL CLIMATE UPDATES

Outcomes and actions relevant to the Task Team

The Team reviewed the main recommendations of the preceding Expert Meeting on Scoping GSCU, as well as the recommended outline of the GSCU and the GSCU Mark 0 draft as provided in preliminary form in Annexes III, IV and V respectively.

Further activities of the Task Team to facilitate the implementation and pilot phase of the GSCU

The Team discussed the GSCU Mark 1 minimum format and agreed on the following minimum requirements. It was noted, however, that other parameters – for example, circulation variables such as sea-level pressure – may also be required and that addition of further parameters will be considered during the GSCU pilot phase.

GSCU Mark 1 minimum requirements:

Executive summary:

- *Tbc (to be developed later during the pilot phase)*

Monitoring section:

- *3 global tercile anomaly maps for Sea Surface Temperature, air temperature and precipitation (previous 3 months' averages) with higher order percentile indications*
- *1 table of monthly index values for major climate-relevant atmospheric modes, including monsoon indices, for previous 3 months*
- *1 table of monthly index values of Sea Surface Temperature indices for previous 3 months (Indian Ocean Dipole, Niño areas, etc.)*
- *1 schematic map of climate anomalies and events for previous 3 months*
- *Consistent expert text assessment on the past and current state of the global climate system, based on the maps and tables provided in the monitoring section. The text assessment should also provide a brief qualitative forecast assessment statement regarding the relevant previous GSCU prediction information.*

Prediction section:

- *3 global tercile probability maps for Sea Surface Temperature, air temperature and precipitation evolution for an upcoming 3 months period (cf. next para., 2nd bullet)*
- *3 global skill maps (ROC) including all 3 tercile categories for the above Sea Surface Temperature, air temperature and precipitation prediction maps*
- *1 single table or graphic combining SST anomaly forecasts for Niño 3.4 region from GPCs and other modelling centres*
- *Consistent expert text assessment on the future evolution of the state of the global climate system, based on the maps and tables provided in the prediction section.*

The Team agreed on the following recommendations:

- To assign leadership for the production of the GSCU Mark 0, and to defer assignment of leadership of pilot phase (which will include consensus discussions based on the Mark 1 version) until the next Task Team meeting;
- To consider the provision of two sets of GSCU prediction products with lead times of 1 month and 2 months respectively (*Note: The Team felt that two months lead time is a requirement in many cases, particularly to meet the operational needs of most regional prediction providers. For example, forecasts for the Asian summer monsoon are generally issued in April well ahead of the peak JJAS season. The Team noted that prediction products for lead time of 2-4 months are not yet available routinely from all GPCs including the Lead Centres*);
- To communicate the finalised GSCU Mark 1 minimum criteria to producers of global climate monitoring information, GPCs and their associated Lead Centres;

- To invite the International Research Institute for Climate and Society (IRI) to contribute the ENSO information to the GSCU in continuation of their role in the production of the WMO El Niño/La Niña Update;
- To have all global maps of the GSCU prediction part be generated by the LC-LRFMME;
- To determine the development to GPC and LC products needed to achieve the above, and the time required for the development;
- To start discussions on tailoring GSCU information to better meet global user needs after the pre-operational production of the GSCU Mark 1 will have begun (*Note: It was agreed that development of a GSCU of practical value to the climate prediction community is in itself a large and complex undertaking, and must be the first step. Tailoring to specific user needs will be considered in parallel).*

The Team noted a number of challenges including: the use of different reference periods currently used in climate monitoring and in climate prediction products, the need to select a sufficient set of climate indices for the monitoring component that collectively describe the observed climate system to the extent required, and the current levels of prediction skill for these indices. It was agreed to keep a log of such challenges.

In order to co-ordinate the GSCU implementation according to the mandates as laid down in its ToRs, the Team agreed on the following actions:

Action 2

Mr Won-Tae Yun and Mr Vladimir Kryjov to evaluate the work needed to develop all GSCU prediction products from the LC-LRFMME archive, including the feasibility of generating products with lead times of 1 month and 2 months respectively. The time required to complete this preparatory work for GSCU Mark 1 is also to be estimated.

Action 3

Mr. Alex Cannon to evaluate the feasibility and practicality to generate at LC-SVSLRF (Montreal) single skill maps (ROC) including all 3 tercile categories for each GSCU global prediction map of the two different lead time product sets.

Action 4

Mr. Richard Graham to lead the finalisation and distribution of the GSCU Mark 0 (assignment of leadership of the pilot phase, based on GSCU Mark 1, to be deferred until the next Task Team meeting) and to keep track of, and to raise within the Team, key challenges that may present barriers to progress, particularly those that may be addressed through cross WMO Technical Commission liaison.

Action 5

Ms Janita Pahalad and Mr. Christopher Oludhe to bring the GSCU concept to the attention of RCOFs to discuss the respective interface with a special focus on the appropriate lead times.

Action 6

WMO Secretariat to draft a specific letter to the global producers of climate monitoring information to invite contributions to the GSCU and nominations of GSCU Focal Points. Mrs Ahira Sanchez-Lugo to co-ordinate with these Focal Points on aspects of

the feasibility of the GSCU including (i) the use of a common reference period for related climate monitoring products, (ii) prospects of introducing tercile/percentile-style maps for climate monitoring results, (iii) prospects of developing a 3 months climate anomalies and events map and (iv) an analysis of the respective work to be done to tackle (i)-(iii).

Action 7

WMO Secretariat to inform IRI of the implications of the GSCU development to the ongoing WMO-IRI collaboration in developing the WMO El Niño/La Niña Update, and to invite IRI to contribute the ENSO information to the GSCU.

Action 8

WMO Secretariat to circulate amongst the Task Team members the draft of the letter inviting GSCU contributions (cf. Annex III, recommendation 4). In addition to the content as recommended by the Expert Meeting on Scoping GSCUs, the letter should address challenges, such as the issue of consistent reference periods for the climate monitoring and prediction information included in the GSCU, and should invite nominations of Focal Points to discuss appropriate solutions.

5. LIAISON WITH OTHER WMO EXPERT GROUPS INCLUDING THE CCL TASK TEAM ON CLIMATE MONITORING, THE CBS EXPERT TEAM ON EXTENDED AND LONG-RANGE FORECASTING, RELEVANT CAS AND WCRP GROUPS ETC.

The Team highlighted the various interfaces, and agreed to closely liaise, with other WMO groups. The Team noted that the issues concerning the need for better understanding of climate indices and their influences as well as better standardisation of climate reference periods for climate monitoring and prediction products require appropriate coordination with CCI OPACE 2. Furthermore the Team highlighted the close coordination with the CBS Expert Team on Extended and Long-range Forecasting (ET-ELRF) through the co-chair of the TT/GSCU, who is currently also chairing the ET-ELRF.

The Team was presented with the announcement of a workshop on 'Sub-seasonal to Seasonal Prediction', scheduled to be held 1-3 December 2010 at UK MetOffice Headquarters in Exeter/UK. The Team felt, that the GSCU concept including its implementation and research aspects will be most appropriately represented by the Team's chair, Mr Won-Tae Yun (Korea) and Mr Arun Kumar (USA), both of whom are on the workshop's programme committee).

6. COMPONENTS OF A TASK TEAM'S WORKPLAN

The Team agreed to organise its work along the actions provided in the report.

7. ANY OTHER BUSINESS

Mr Avinash Tyagi, Director of WMO's Climate and Water Department stressed the importance of the GSCU concept in the framework of the Global Framework for Climate Services (GFCS) and addressed its interfaces with the building blocks of WMO's contributions to the GFCS Climate Services Information System (CSIS), namely WMO Global Producing Centres on Long-range Forecasting (GPC), producers of global climate monitoring information, WMO Regional

Climate Centres (RCC), National Meteorological and Hydrological Services (NMHS), etc. He discussed a proposal for organising, in spring 2011 before the 16th World Meteorological Congress (CG-XVI), a technical workshop with respective GPC, RCC and NMHS participation in order to strengthen their collaboration in terms of technical interfaces, product standardization, coordination etc.

The Team discussed, and expressed its full support to, the proposal, noting, that such a technical workshop would greatly facilitate the implementation of the GSCU.

Action 9

Mr Won-Tae Yun, Chair of TT/GSCU, to formally communicate the proposal to the CCI Management Group for their consideration and respective liaison with the CBS Management Group as appropriate.

The Team discussed options to facilitate its work and agreed to consider a further physical Task Team meeting in autumn 2011. Such timing would allow the Team (i) to review any relevant feedback from CG-XVI, (ii) to analyse the responses to the WMO letter inviting GSCU contributions (cf. Annex III, recommendation 4), and (iii) to assess and discuss further steps in order to implement the GSCU accordingly.

8. CONCLUSIONS AND RECOMMENDATIONS

The team reviewed the actions as provided in this report.

9. CLOSING

The meeting of the CCI Task Team on Global Seasonal Climate Updates closed at 16:00 on Friday, 15 October 2010.

PROVISIONAL AGENDA

1. **OPENING**
2. **ORGANIZATION OF THE MEETING**
 - 2.1 Adoption of the agenda
 - 2.2 Working arrangements
3. **INTRODUCTION: CONTEXT FOR, AND TERMS OF REFERENCE OF, THE TASK TEAM ON GLOBAL SEASONAL CLIMATE UPDATES**
4. **OUTCOME OF THE EXPERT MEETING ON SCOPING GLOBAL SEASONAL CLIMATE UPDATES**
 - 4.1 Outcomes and actions relevant to the Task Team
 - 4.2 Further activities of the Task Team to facilitate the implementation and pilot phase of the GSCU
5. **LIAISON WITH OTHER WMO EXPERT GROUPS INCLUDING THE CCI TASK TEAM ON CLIMATE MONITORING, THE CBS EXPERT TEAM ON EXTENDED AND LONG-RANGE FORECASTING, RELEVANT CAS AND WCRP GROUPS ETC.**
6. **COMPONENTS OF A TASK TEAM'S WORKPLAN**
7. **ANY OTHER BUSINESS (AOB)**
8. **CONCLUSIONS AND RECOMMENDATIONS**
9. **CLOSING**

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SUMMARY OF RECOMMENDATIONS FROM THE EXPERT MEETING ON SCOPING GSCU

- 1 To start with the development of a tailored GSCU to address the needs of regional and national meteorological entities and mechanisms, such as RCCs, RCOFs, regional institutions (ACMAD, ICPAC, CIIFEN etc), NMHS etc.
- 2 To start with a quarterly production and issuance of the GSCU Mark 1 and, during the pilot phase, to investigate the viability of a monthly production cycle
- 3 To request the CCI Task Team on GSCU:
 - a. To lead the definition of a GSCU Mark 1 minimum format, to circulate it amongst the scoping meeting participants (by December 2010) and to revise the proposal accordingly
 - b. To lead the compilation of a GSCU Mark 0, to circulate it amongst the scoping meeting participants and to revise it accordingly (by March 2011)
 - c. To lead the identification of the work required and the time needed to achieve the Mark 1 minimum format (by June)
 - d. To determine the exact timing of the GSCU Mark 1 production taking into consideration aspects of lead time requirements
 - e. To start, within the proposed GSCU pilot phase, a specific dialogue with potential GSCU global users including media to explore possibilities of tailoring its executive summary information to better meet their respective needs. This activity should consider existing collaborations and mechanisms with the global user community, including the work of the CBS Task Team on Meteorological Services for Improved Humanitarian Planning and Response. To tackle this activity, the Task Team should take into account the potential conflict of interests between WMO's mandate to serve its Members versus meeting global user's needs, and should propose a related appropriate co-ordination mechanism with WMO regional and national entities.
- 4 WMO Secretariat to send a letter to all institutions represented at the scoping meeting and other relevant organisations, inviting them to express interest in contributing to the GSCU Mark 1 production process (by June 2011). It is suggested to attach to this letter a GSCU Mark 0 version for illustration as well as the proposed GSCU Mark 1 minimum format including an indication of the work required to achieve GSCU Mark 1. Furthermore, the letter should indicate the intent to investigate the viability of a monthly production cycle.
- 5 To present to Cg-XVI a GSCU Mark 0 for illustration as well as the proposed GSCU Mark 1 minimum format including an indication of the work required and time needed to achieve GSCU Mark 1.
- 6 To urge GPCs and their associated Lead Centres (e.g. LC-LRFMME and LC-SVSLRF) and other global producers of climate monitoring and prediction information (e.g. IRI, APCC, etc) to support the work of the TT/GSCU in tackling the necessary preparations for the GSCU Mark 1 pilot.

Explanatory note:

- Mark 0* *Mock version of the GSCU for illustration of its content and structure*
Mark 1 *prototype version of the GSCU for pilot operations*

GSCU OUTLINE AS PROPOSED BY THE EXPERT MEETING ON SCOPING GSCU

Date of issuance

Introductory note

- 0 Executive summary:** Most striking features of the current GSCU
- 1 Global-scale climate monitoring results for the previous 3 months**
 - Global temperature and SST anomalies (maps and text discussion)
 - Linked major circulation features, such as ENSO (maps and text discussion)
 - Global precipitation anomalies (map and text discussion)
 - Global hazards (event map and text discussion) and attribution (where possible)
 - For consideration: information on environmental impact (e.g. coral bleaching), tropical storms, monsoons, sea ice extent, snow cover
- 2 Potential evolution of the state of the climate over the next 3 months**
 - Note on prominent features as well as RCOFs scheduled during forecast period
 - ENSO maps (incl. plumes) and text discussion
 - Global SST evolution (forecast and skill map) and text discussion including ENSO, IOD, NAO impacts
 - Global temperature evolution (forecast and skill map) and text discussion
 - Global precipitation evolution (forecast and skill map) and text discussion
- 3 How to use the Global Seasonal Climate Update**
- 4 References**
- 5 Acknowledgements**

Notes:

- *Monitoring and prediction information should be linked and use the same presentation formats, reference periods etc to the extent possible*
- *Further variables may be added during the pilot phase if a need is identified*
- *Additional products/material could be maintained on a Web Site*

GLOBAL SEASONAL CLIMATE UPDATE

--- DRAFT OUTLINE MARK 0---

[Date of issuance: xx.yy.zzzz]

Note: The Update summarises the past and current status as well as the expected future behaviour of the state of the global climate including major general circulation features and large-scale oceanic anomalies on the seasonal timescale and discusses.

The GSCU is produced quarterly and issued on 1 March, 1 June, 1 September and 1 December.

0 Executive summary

[most striking features of the current issue of the Update]

1 Global-scale climate monitoring results for the previous 3 months

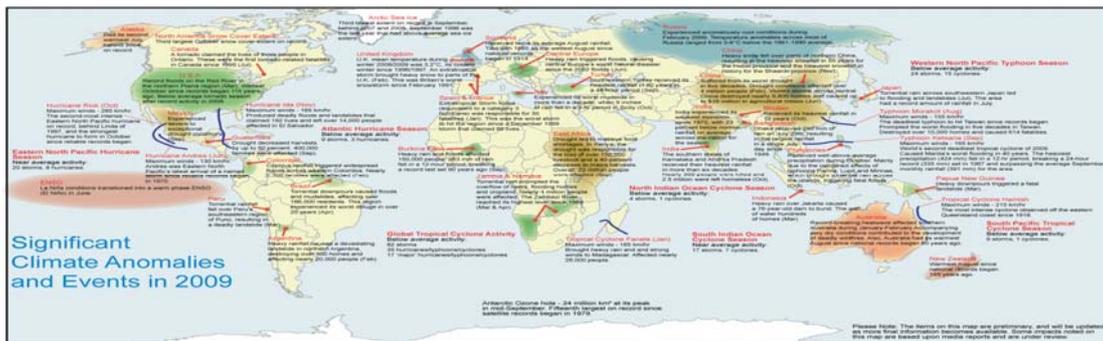
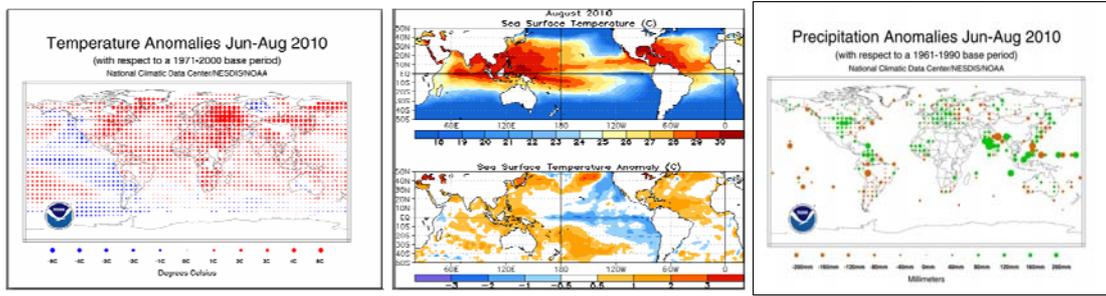
[The combined global land and ocean surface temperature during June–August 2010 was 16.2°C (61.3°F), which is 0.64°C (1.15°F) above the 20th century average of 15.6°C (60.1°F)—resulting in the second warmest June–August on record, behind 1998. Warmer-than-average temperatures were present across most of the world's land surface, with the warmest anomalies observed across eastern Europe, the eastern half of the contiguous U.S., and parts of eastern Canada, and eastern Asia. However, cooler-than-average conditions were present across parts of central Russia and southern South America. Overall, the worldwide land-only surface temperature ranked as the warmest on record, surpassing the previous record set in 1998 by 0.08°C (0.14°F). The June–August 2010 worldwide land-only surface temperature was 1.00°C (1.80°F) above the 20th century average of 13.8°C (56.9°F). Meanwhile, the worldwide ocean surface temperature was 0.51°C (0.92°F) above the 20th century average of 16.4°C (61.5°F), resulting in the fifth warmest such period on record. The Atlantic, Indian, and western Pacific oceans had warmer-than-average conditions, while the equatorial Pacific Ocean, and along the North and South American Pacific coast, experienced cooler-than-average conditions associated with a developing La Niña .(NOAA's Global August 2010 SotC)]

[Moderate to strong La Niña conditions was present in the central and eastern equatorial Pacific, where sea surface temperatures are around 1.5 degrees Celsius cooler than average. The atmosphere across the tropical Pacific is now well coupled to this sea surface temperature pattern, with strengthened trade winds and markedly reduced cloudiness over a substantial portion of the central and eastern equatorial Pacific. The subsurface waters of the central and eastern equatorial Pacific also strongly reflect La Niña conditions, with temperatures of 2 to 6 degrees Celsius below average. This large volume of anomalously cold water will likely maintain or strengthen the cold waters already at the ocean surface.... This La Niña developed quickly in June and July 2010, following the dissipation of the 2009/10 El Niño in April. Unlike many El Niño or La Niña events that have unequal contributions from the oceanic and atmospheric components during onset, this event featured strong ocean-atmosphere coupling since its initial development in June, following a strong initial spell of enhanced trade winds in the western equatorial Pacific in May. By August the event had become moderate to strong, and currently continues at approximately the same strength. (WMO ENSO report...other sources: NOAA's CPC, BoM)]

[Precipitation Information/Hazards- During the June–August 2010 period, above-average precipitation fell over areas that included southeast Asia, the central U.S., northern South America, and parts of Europe.

China floods (August 2010)... [La Niña](#) conditions—which [officially began](#) in July—were thought to be a [contributing factor](#) to the unusually heavy rains during this monsoon season. The [worst Asian](#)

[Monsoon rains in decades](#) continued to devastate Pakistan through the month of August (see also the [July Global Hazards](#) report for more detail on initial flooding and destruction).



2 Potential evolution of the state of the climate over the next 3 months

El Nino Southern Oscillation (ENSO)

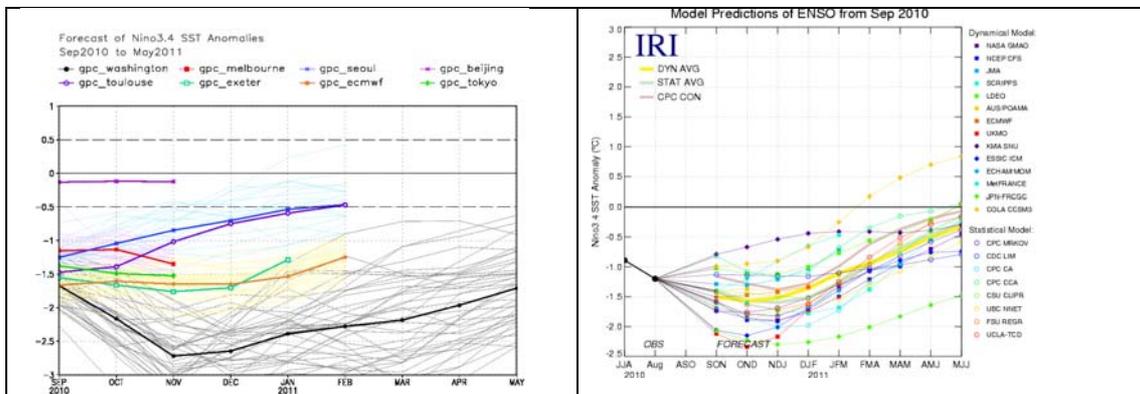


Fig. 1: ENSO plumes

Discussion, ENSO example: The La Nina is expected to sustain or increase its strength and endure at least through the normal El Nino/La Nina life cycle into the first quarter of 2011. Almost all forecast models predict continuation, and possible further strengthening, of this La Nina episode for the next 4-6 months, taking the event well into the first quarter of 2011 (Fig. 1).

Global SST evolution

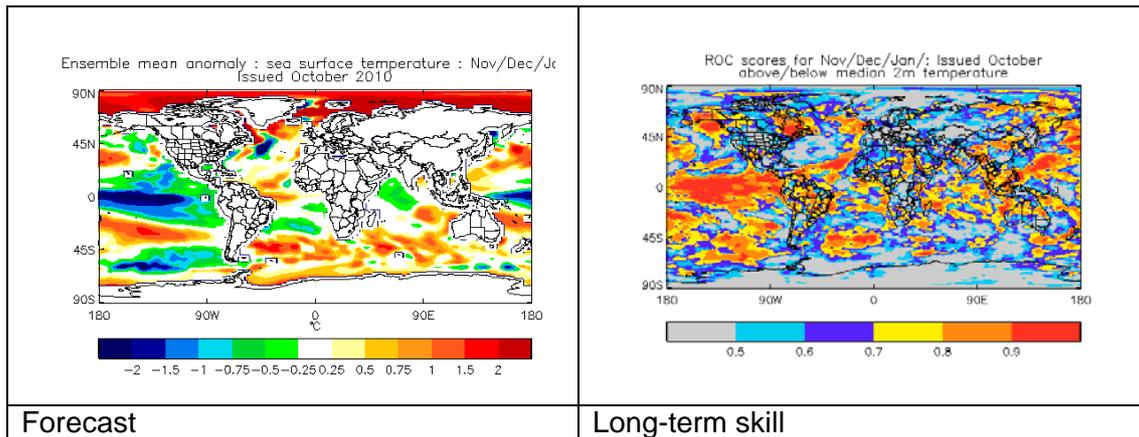


Fig. 2: SST tercile category probability forecasts (best available from LC-LRFMME coupled models plus 1-persistence projection) with skill.

Discussion, SST: on predicted evolution with reference to current anomalies in monitoring section, ENSO, IOD, North Atlantic etc. and prediction skill (Fig. 2)

Temperature

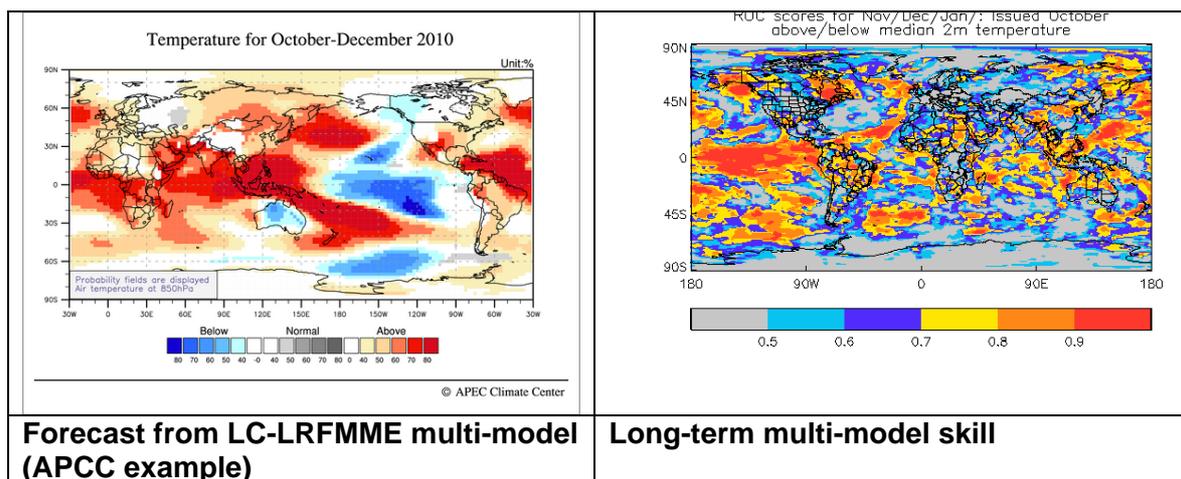


Fig. 3: Tercile probability forecast. Skill will show ROC score for the most likely predicted category. (Tercile probability format selected for consistency with RCOF format)

Discussion, temperature: With reference to existing anomalies from the monitoring sections, and alerting to any new predicted anomaly developments, and consistency with SST evolution

APCC example: The forecast for October-December 2010 indicates persistent warm conditions over most of the Globe (except the Pacific Ocean), including Africa, central-to-eastern Russia, West Asia, Pakistan, northern parts of India, China, Korea, Japan and the adjoining regions, Maritime Continent, and southern Polynesian. It is also likely to be warmer than normal over USA and Latin America Below normal temperature is expected in the central and the eastern Pacific. Most of Australia, western parts of Canada may be slightly colder than normal.

Rainfall Outlook

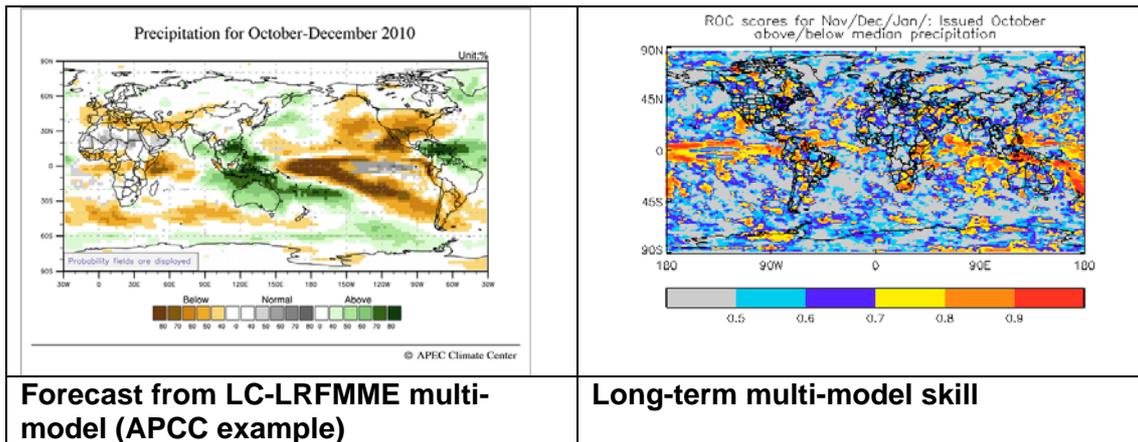


Fig. 4: Tercile probability forecast. Skill will show ROC score for the most likely predicted category. (Tercile probability format selected for consistency with RCOF format)

Discussion, rainfall: With reference to existing anomalies from the monitoring sections, and alerting to any new predicted anomaly developments, consistency with SST prediction.

APCC example: There is a strong chance of above normal rainfall over the maritime continent, India adjoining the Bay of Bengal, southeastern coast of China and adjoining East China Sea, the northwestern Pacific, Southeast Asia, Australia, South Polynesian Islands, equatorial Latin America, and the tropical Atlantic Ocean. Suppressed rainfall is expected over the central to eastern Pacific, and southern North America. Suppressed precipitation is also forecasted over few places over equatorial western Africa and adjoining Indian Ocean.

3 How to use the Global Seasonal Climate Update

[...(remarks on the probabilistic nature of the GSCU), users to consult tailored regional and national climate outlooks ...]

4 References

[...(Weblinks to specific educational material and forecasts) ...]

5 Acknowledgements

[contributors]