PARALLEL SESSION B3

CLIMATE VARIABILITY PREDICTABILITY

Chair: Joseph N Mutemi
UoN/ICPAC-KENYA

Moderator: Alessandra Giannini
IRI-USA

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By J N Mutemi

B3 Climate Variability and Predictability

Statement of End user needs:

- Climate indicators for informing decision-making across a wide range of users: Agriculture, water sectors, risk management, adaptation implementers and contingency planners all need high level of confidence as action, especially when actions involve costs:

- Probability should be above certain threshold, for confidence that impacts justify the costs (e.g. probability above 60% implies significant impacts)
- Some user-sectors need precise climate data to derive their operations (data is not typically information, but data can give information)

Summary of the State of Knowledge

How much do we know about Predictability Frontier?. Current understanding is applied in climate modeling and prediction, examples

- Use of ENSO teleconnection with rainfall over various parts of the continent, alongside SSTs modes and gradient over Indian and Atlantic ocean linkage with rainfall over various parts of Africa and SST variability in Indian and Atlantic oceans
- Knowledge is increasing the predictability at sub-seasonal scales by use of MJO and other shorter variability oscillatory features including Kelvin waves in convective in parts of Africa.
- New are approaches are emerging and appear successful in prediction seasonal rainfall at seasons and areas whose skill is traditionally perceived as low, e.g. use of sub-seasonal attributes/ components in predicting long rainfall season in E.Africa is showing good results.
- Projects like MISVA focusing on rainfall forecasting at intraseasonal time scales in parts of Africa could be good tool for applications, but need to quantify and improve forecast skills of MISVA products. This can be effectively worked upon by collaboration between universities and meteorological services.
- SWFDP is an good example demonstrating that improvements due to use of numerical weather forecasting, satellite observations, etc at African NMCs. An example of improved weather forecasts was shown for Lake Victoria forecasts.

Summary of current Gaps:

- Processes of predictability are still not well known due to limitations like non-availability of in-situ data sets in many parts of Africa, e.g. over the Sahel, Horn of Africa, and large part of Central Africa. Need long in situ records.
- There are still outstanding questions about mechanisms controlling onset and intreaseasonal characteristics of rainfall seasons in most parts of Equatorial Africa.

Proposed Strategy as way forward:

- Strengthen collaboration between researchers and NMCs
- Capacity building & Young Scientists: Have sustained capacity building and training that enables scientists develop skills and expertise that can provide expert leadership in climate science
- Implement research activities which target predictability at all scales, e.g. from sub-seasonal to seasonal and decadal scales, identifying possible driving mechanisms.
- Continue research activities towards advancing understanding of processes at all scales
- More validation is needed
- Improve resolution of forecasts
- Coupled modeling should be improved to advance predictive knowledge over various parts of the continent (e.g. Sahel, W. Africa, E. Africa/Horn, S. Africa)
- Lower stratospheric oscillations have not been used much.
- MJO research should be increased.
- Broader investment in more coordinated investigations, for example link between Indian Ocean dipole and ENSO, etc;
- Boundary layer role in weather and Climate has not been addressed.
- There is need to better communicate forecast information so that it reaches the people who need it.
- There should be sharing of lessons learned, e.g. form severe weather warnings.


THANK
YOU
VERY
MUCH