S2S Real Time Pilot Workshop

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Presentation Title: Reflections on the S2S RTP in Kenya

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Session Title: Theme 2: Use and evaluation of S2S forecast applications

Abstract:

The project 'ForPAc' www.forpac.org (2017-2021, funded under the UK SHEAR programme http://shear.org.uk/ project) aimed to improve flood and drought EWS in Kenya. ForPAc involved the mandated agencies for forecast provision and risk management.

Research from ForPAc (MacLeod, 2018; MacLeod et al 2021) and others (e.g. de Andrade et al. 2021) highlights East Africa as a 'sweetspot' for subseasonal predictability.

There was a clear demand for sub-seasonal information from the flood and drought risk management stakeholders. Hence, ForPAc engaged with the S2S RTP.

We report here on two strands of aligned activities.

1. Within the S2S RTP itself ForPAc prioritised heavy rain and flood risk management in Nairobi City. Kenya Meteorological Department (KMD) and stakeholders co-developed sub-seasonal heavy rainfall forecast products (from ECMWF ENS-extended), and actions that can be triggered at different lead times.

   The products were piloted through two wet seasons. Dissemination of these products informed implementation of flood mitigation measures in the city e.g. unblocking drainages by county government and communities.

2. In parallel activities (Graham et al., in White et al., 2022) subseasonal rainfall tercile forecasts from GLOSEA5 were provided to KMD, in the form of weekly guidance bulletins with a supporting narrative (including the prediction skill and underlying MJO teleconnection dynamics).

   When subseasonal forecast confidence was high the information was used in operational forecasts e.g. enhancing KMD monthly bulletins to Kenyan public, including farming communities, as well as targeted dissemination to Kenya Red Cross Society (KRCS) emergency operations.

   In two cases of note KMD updated their seasonal lead time rainfall onset forecasts for the anomalously late and early onsets in OND 2019 and MAM 2019, respectively. Subsequently, KMD used the ECMWF ensemble mean weekly rainfall product, and similarly updated the MAM 2022 onset forecast.

Lessons from these activities include

- Strong appetite exists from: (1) risk management agencies for subseasonal forecasts and (2) from NHMSs for the raw forecast data to enhance operational forecasting and meet these user needs. This is especially critical during the MAM season which typically has lower predictability at seasonal lead time.

- There is a critical need to significantly enhance capacity in NHMS to develop, co-produce and disseminate tailor-made products, and to sustainably embed this in operations.
- Capacity of risk management stakeholders to co-produce and then utilise forecasts is highly variable, depending on resource and capacity e.g. uptake by KRCS operations is strong given their commitment towards ‘seamless’ anticipatory risk management.
- For riverine flooding the KMD flood EWS model was not able to ingest forecasts at S2S lead times.
- The co-production process is time consuming and resource intensive and for sustainable services significant investment is required
- Sharing formal forecast verification information provides confidence to stakeholders but there is a need to evaluate the benefits of forecast based decisions
- There is latent demand across wider climate risk management actors, e.g. social enterprises involved in agriculture support
- Overall, in Kenya and East Africa there is an strong opportunity which is not yet being sufficient seized