

Seasonal Forecasting & Climate Modelling Technical Training Workshop : Report week 2

December 3-7, 2018

University of Seychelles - Anse Royale Campus, Seychelles

1. Background

The climate change affects particularly the environment of the Small Islands Developing Countries. In the equatorial Indian Ocean, Seychelles have to cope with extreme events linked to the climate variability at different time scales. Changes in the rainfall pattern have dramatic impact on water resource, food and health. The Seychelles Meteorological Authority (SMA) contributes to climate risk management by delivering relevant local climate information that include monitoring and forecasting. At seasonal timescale the SMA issues a monthly bulletin towards various stakeholders from public and private sectors.

In the South West Indian Ocean (SWIO) region, the seasonal forecast activity is fostered by an annual international meeting : the SWIO Climate Outlook Forum. (SWIOCOF). This meeting is usually organized in September, before the onset of the rainy season. It allows to share expertise between the National Meteorological and Hydrological Services (NMHS) and to issue a consensual climate outlook for the coming season as well as to discuss this result with end-users from various sectors. The scientific activities of this workshop are lead by Météo France Réunion which expertise over the SWIO region includes the implementation of a statistical tool dedicated to climate analysis and seasonal forecasts downscaling.

In this context, the GCCA+ project provided an opportunity to help the SMA strengthen its technical capacities in order to maintain the operational status of the seasonal forecast activity. For this purpose a training workshop was set up with the contribution of Météo France Réunion experts. It was also an occasion to raise the climate literacy and more specifically the seasonal forecast awareness in the stakeholders community.

2. Workshop objectives

The overall objective of the training was to strengthen the capacities of key professional and technical staff in SMA on seasonal forecasting. The specific goal was to develop practical skills in delivering operational bulletins. A side objective dedicated to non meteorological audience was to bring some keys to understanding the issues regarding the seasonal climate dynamics and forecast and namely the probabilistic nature of the latter.

The training was split in two sessions. The first one took place in November 12-16, 2018. The program included presentations about the climate variability in the SWIO region, the numerical analysis and forecast models at large-scale and the use of the Seafords tool to identify the drivers of the Seychelles climate and its predictability around the year. The second session took place in December 3-7, 2018. After a short recall of the main outcomes of the first session, the program targeted the practical implementation of the Seafords tool in order to perform local seasonal forecasts for different case studies. The specific objective was to provide the trainees with a methodology, and the associated tool, to deliver a forecast on a regular basis. Eventually an introduction to climate services was planned with an example in the field of water management.

3. Participants week 2

This session was attended by 11 trainees, including 4 people from the university, 1 person from PUC, 1 person from DRDM and 5 people from SMA.

All the participants were not present every day mainly due to the fact that the SMA people had to be on shift in the forecasting service. However this was never an issue since each day began with a reminder of what was made the day before and also because the size of the group allowed to bring some personal support to the concerned people.

4. Main outputs

The following presentations were prepared:

- Summary of session 1 (climate of the SWIO region, statistical methods to analyze the main climate drivers)
- Seafords downscaling model
- Available data at local and large scale for case studies
- Climate services
- Overall synthesis

The practices allowed a comprehensive exploration of the local rainfall predictability and the definition of a seasonal forecast process beginning with the large-scale analysis and leading to the making of a forecast map to be published in bulletins. These elements are described in a specific manual.

Time series of storage percentage for two dam reservoirs (La Gogue and Rochon) were provided by PUC. These datasets were first examined and some correlation was found with rainfall data. Then they were used as predictands with the Seafords statistical model and some predictability was found for some quarters. However a deeper understanding of the dynamics and variability of the hydrology of these two reservoirs is needed to be able to produce a realistic and reliable forecasts. Nevertheless this experiment was a useful introduction to tailoring a climate service.

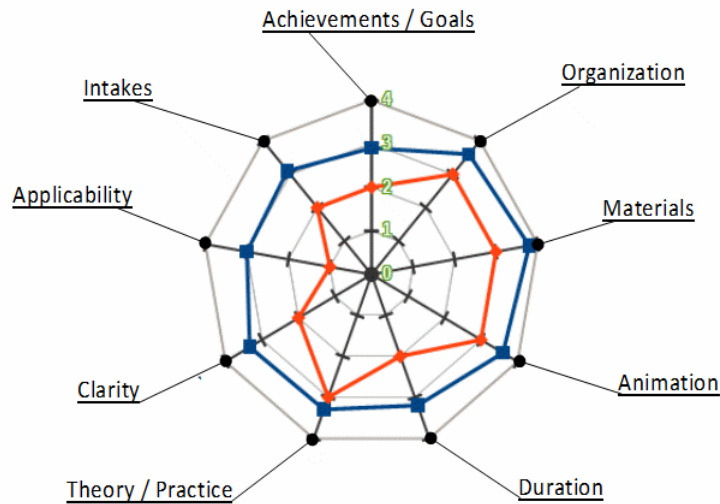
The training material distributed to participants is available following this link:

<https://drive.google.com/open?id=1nri7-y6eRoAX6j87mGx8Pue9LtGp-A-m>

5. General comments and feedback from participants

At the end of the training, an on-the-spot evaluation was conducted using a form that included 9 specific questions to be rated from 4 (excellent) to 0 (worthless):

- Stated goals vs. achieved objectives
- Intakes on a personal and/or personal level
- Applicability of what was learnt
- Clarity of the message
- Balance between theory and practice
- Duration
- Animation, consideration of group feedback
- Quality of training materials
- Organization



The analysis of the responses lead to the figure above. The blue line is the average rate and the orange line is the minimum rate for each question.

The overall appreciation of the training is quite satisfactory. The worse rates are obtained for the three first questions. This is due to the range of the audience. As the training was firstly dedicated to the SMA people, the operational aspects were of minor interest for the trainees from university or other institutions.

An open field was also left for general comment about the training. A frequent point was the interest in learning how to use a statistical tool (R software). Some people suggested that this kind of training should be renewed to reach a larger audience and take into account the turn-over at the SMA.

6. Conclusions

The SMA is a dynamic service with qualified staff mainly for meteorological forecast activity. This training was a good opportunity to strengthen their capacities in the field of climate analysis and forecasting. The practical work allowed to define a specific methodology for Seychelles seasonal forecasting. The follow-up of the training will be ensured through the participation of the SMA to the SWIOCOF process.

The participation of trainees from other institutions was both an advantage and a drawback since more time had to be spent explaining basic information but giving more details was also useful for the whole audience. Increasing the knowledge of climate science among the SMA end-users is also a step towards tailoring climate services. In the water management case, the first experiment with PUC data was encouraging. It needs more interactions with PUC staff to understand the variability identified while exploring the data and explain the links between rainfall and storage percentage.

7. Workshop agenda

The planned agenda of the second session is given hereafter.

MONDAY, 03rd DECEMBER, 2018		
SESSION I: RECAP SESSION & RELEVANT DATA		
09:00 – 09:30	Opening Remarks	(GCCA+ & SMA)
09:30 – 10:30	Recap session: Climate modeling & Mean regional climate	Laurent Labbe
10:30 – 11:00	Coffee Break	
11:00 – 12:00	Recap session: Climate drivers analysis with SEAFORDS	Laurent Labbe
12:00 – 13:00	Lunch Break	
13:00 – 15:30	Climate modeling: SEAFORDS software description & available data	Laurent Labbe
15:30 – 16:00	Coffee break	

TUESDAY, 04th DECEMBER, 2018		
SESSION II: SEAFORDS tools		
09:00 – 10:30	Practice 1: Regional downscaling / Large scale analysis	Laurent Labbe
10:30 – 11:00	Coffee Break	
11:00 – 12:00	Practice 1 Cont'd : Regional downscaling with SEAFORDS	Laurent Labbe
12:00 – 13:00	Lunch Break	
13:00 – 15:30	Practice 2: Case studies with PP and MOS methods	Laurent Labbe
15:30 – 16:00	Coffee break	

WEDNESDAY, 05th DECEMBER, 2018		
SESSION III: SEASONAL FORECASTING PRACTICE		
09:00 – 10:30	Practice 3: Seasonal forecast of the present situation	Laurent Labbe
10:30 – 11:00	Coffee Break	
11:00 – 12:00	Practice 3 Cont'd: Seasonal forecast of the present situation	Laurent Labbe
12:00 – 13:00	Lunch Break	
13:00 – 15:30	Climate services: science for society / impact oriented indexes	Laurent Labbe
15:30 – 16:00	Coffee break	

THURSDAY, 06th DECEMBER, 2018		
SESSION IV: OPERATIONS for SEASONAL FORECASTING		
09:00 – 10:30	Climate services: tailoring products for end-users	Laurent Labbe
10:30 – 11:00	Coffee Break	
11:00 – 12:00	Practice 4: Predicting indexes with SEAFORDS	Laurent Labbe
12:00 – 13:00	Lunch Break	
13:00 – 15:30	Towards a monthly production of seasonal forecast: organization	Laurent Labbe
15:30 – 16:00	Coffee break	

FRIDAY, 07th DECEMBER, 2018		
SESSION V: SYNTHESIS		
09:00 – 10:00	Practice 5: Fine tuning Seychelles seasonal forecast	Laurent Labbe
10:00 – 11:30	Synthesis session: Practical seasonal forecast	Laurent Labbe
11:30 – 11:45	On-the-spot evaluation	
11:45 – 12:00	Closing remarks	(GCCA+ & SMA)
12:00 – 13:00	Lunch Break	