

GEOGloWS ECMWF Streamflow Service In-depth Training

Background

Sustainable water resource management and reducing risks from flooding hazards are one of the utmost concerns for India's Central Water Commission (CWC). Rather than responding to an adverse water event, being able to anticipate such a situation before actual occurrence, and taking proactive actions to alleviate consequences is the basis for every risk reduction and resilience strategy. Recognizing the need to enhance such capability, and the potential benefits of incorporating the GEOGloWS ECMWF Streamflow Service (GESS) in the region, CWC is interested in familiarizing with GESS. To this end, a more in-depth training has been proposed for part of CWC's technical staff. This document details the topics to discuss in the proposed training.

No system built around a modeling approach can be considered fit-for-purpose without performing rigorous validation exercises that a model is capable of simulating reality within an acceptable margin of error. The validation process also exposes areas of model improvement in terms of physical parameterization, boundary and initial conditions. Thus, the training will also include an important session to validate model performance and verify forecast skill to ensure:

- ☒ GESS forecasting products are sustainable and deliver on the CWC's needs and expectations
- ☒ Modeled results can be evaluated against actual observations to measure predictive skill, spot errors and test for significance within acceptable confidence level.

Objectives

The objectives of this training are:

1. Provide an overview of the model behind GESS.
2. Familiarize participants with the REST API used to access results from GESS.
3. Familiarize participants on API-powered applications and demonstrate their use in real world situations.

4. Develop skill and best practices through hands-on exercises in using forecasting applications to support decision-making, and incorporating the forecast into other systems using the REST API.

Expected Outcomes

- The participants are better informed on the model and inputs behind GESS.
- The participants have a better understanding of web service and specifically, how to use the GESS REST API
- Improve CWC's potential for adoption and uptake of GESS forecasting services, tools, and applications.

Training Agenda

Time	Topic	Instructor
Day 1: TBD	Model Workflow	
10:00-10:15	Introduction	Dr. Michael Souffront
10:15-10:30	ECMWF Runoff	
10:30-11:00	RAPID	
11:00-11:15	Hydrography	
11:15-11:45	Routing Workflow	
11:45-12:00	Discussion	
Day 2: TBD	REST API	
10:00-10:15	Introduction	Dr. Michael Souffront
10:15-10:30	What is a REST API	
10:30-11:30	GESS REST API Container	
11:30-11:45	GESS REST API Website	
11:45-12:00	GESS REST API Calls	
Day 3: TBD	REST API	
10:00-10:15	Introduction	Dr. Michael Souffront
10:15-10:45	GESS REST API with Python	

10:45-11:45	Web Apps powered by the GESS REST API	
11:45-12:00	Discussion	
Day 4 :TBD	Bias Correction & Service Use Examples	
10:00-11:00	Regional regression Bias Correction	Dr. Michael Souffront
11:00-12:00	Hands-on Exercise	