Version 1.0 (last updated on 19th June, 2019)

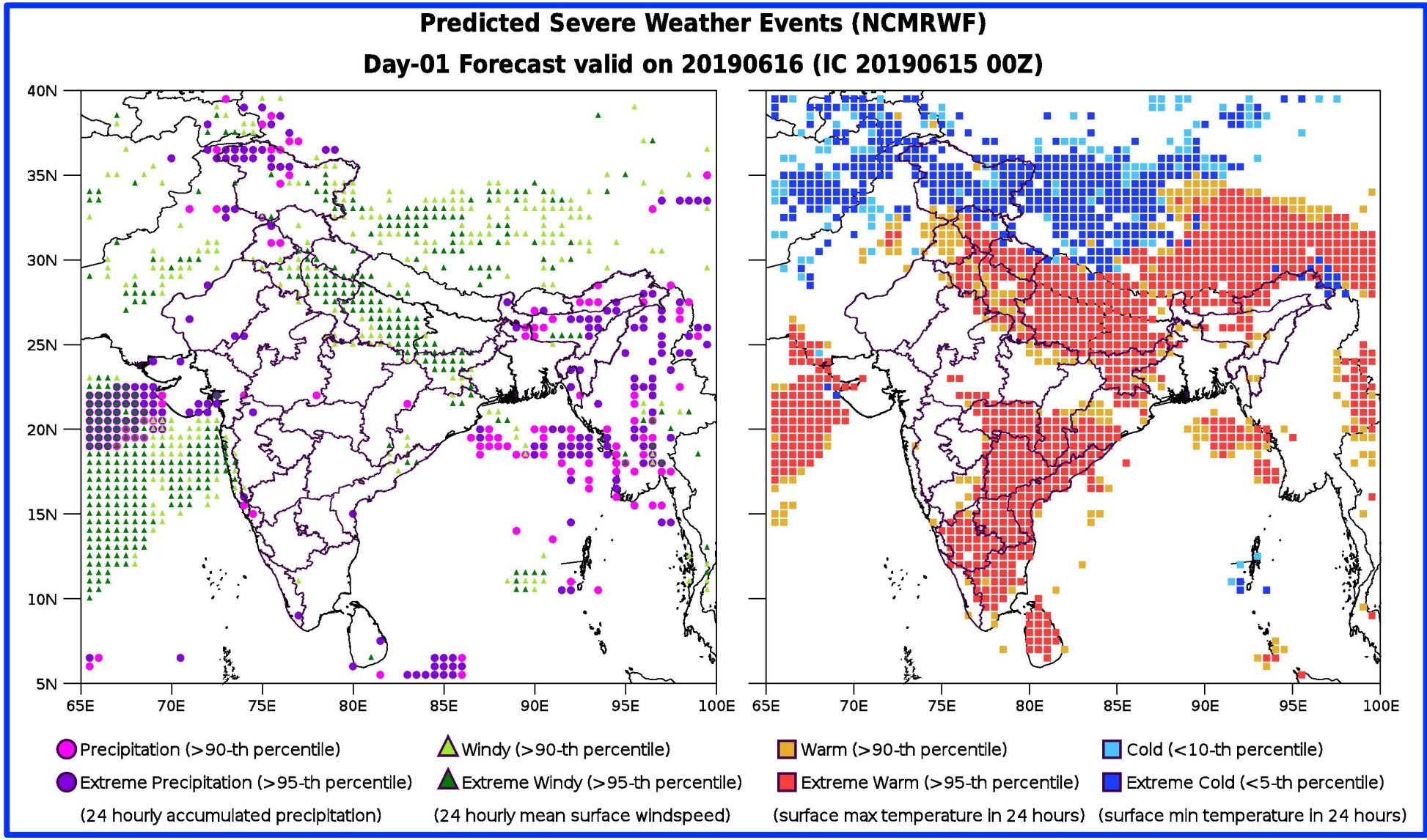
A short description of early warning products for extreme weather events at NCMRWF

NCUM Deterministic-based early warning products

The first type of product highlights the exceedance of 90th, 95th percentiles (or 5th, 10th percentiles) to indicate the extreme weather. The following four extreme weathers are highlighted based on NWP model at NCMRWF.

- heavy rain
- strong winds
- high temperatures
- low temperatures.

In each case, the extreme weather is identified by comparing the actual model forecast values with the model forecast climatology.



As of now next 5-days forecast extremes are being plotted in our web.

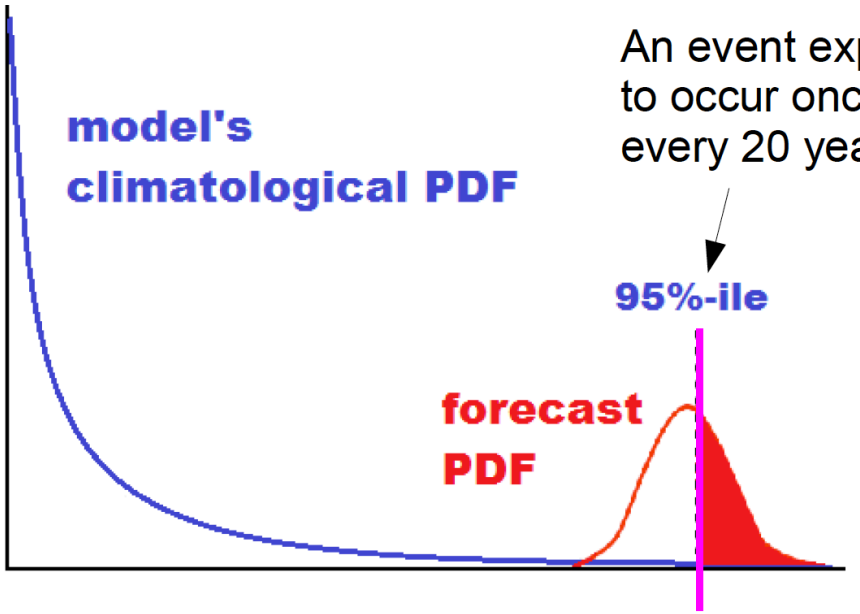
Occurrence probability of an extreme event

Occurrence probability of an extreme event is measured by

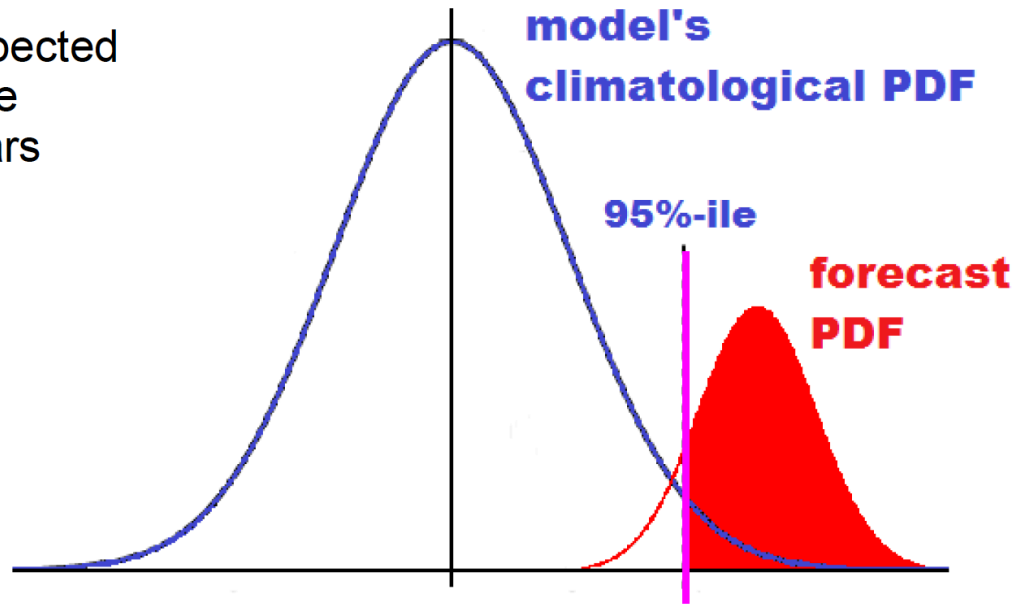
the fraction of ensemble members that predict a higher or lower values than the specified "climatological" percentile (e.g. 95th percentile) to ensemble size.

The occurrence probability is defined at each grid point.

Precipitation



Surface temperature



90th, 95th and 99th percentiles are used to indicate when rainfall, wind or temperatures exceed the values expected on 10%, 5% or 1% of occasions. Similarly, 10th, 5th and 1st percentiles are used for extreme cold temperatures.

Methodology

- NCUM model hindcast from 2015 to 2018 at 0.12x0.18 horizontal grid resolution has been used in place of model forecast climatology.

- We kept moving pentadal days centered on current day forecast from years 2015 to 2018 while computing mean daily climatology and percentiles based on 20 samples (4 years x moving pentadal days) for each 10 days forecasts, respectively.

Acknowledgement

We pleased to acknowledge the products of TIGGE Museum, University of Tsukuba, Japan for adopting the marker colors, styles on maps.

http://gpvjma.ccs.hpcc.jp/TIGGE/tigge_warning.html