# Maldives / South-Asia

**Maldives** is a small island developing state, located in the Indian Ocean. It consists of about 1190 small islands, with a population of 515000 people. Average elevation of the islands are 1 meter above MSL. More than 99% of Maldives area is sea. We are in the most disaster-prone region in the world. Many islands and similar low-lying coastal communities of the region are exposed to specific types of hazards. Which included Tropical Cyclone, Heavy rain and Flooding, Extreme humid heat waves, drought, Strong winds, rough seas, swell wave surges, earthquakes and tsunami to mention few. Global warming and climate change is expected to further increase its magnitude and frequency hence will exaggerate its impact on the communities and human settlements. To add on to it, rapid economic growth and population expansion over the coming decades, along with the impacts of climate change, will increase the exposure and vulnerability of the region to disasters. Multi-hazard early warning systems are among the most effective ways to minimizing the impact of severe natural hazards and disasters.

### GEO Activities in Maldives.

The Government of Maldives has signed an agreement with the Group of Earth Observations (GEO) to produce the first-ever ecosystem atlas of the Maldives. The Global Ecosystem Atlas Accelerator for the Maldives project aims to aid in decision-making for development activities. It will support the sustainable use of natural resources, protection and maintenance of key areas, and the rehabilitation of damaged regions as well. Since we have joined GEO quite recently, there has not been much activities as of now but we anticipate more GEO engagements in Earth Intelligence activities in the Maldives.

### Weather monitoring and Forecasting capacity of Maldives Meteorological Service:

- ➤ 5 Meteorological Observatories
- ➤ 43 Automatic Weather Station
- ➤ 1 Radio Sonde (upper air) observation, Daily
- ➤ 1 Doppler Weather Radar
- ➤ 3 Tide gauges
- ➤ 1 Weather studio
- ➤ 1 Satellite picture receiving system (CMACast system)
- ➤ 2 Long-range Lightning Detection sensors.
- ➤ 2 Seismometers
- ➤ WRF and WW3 NWP local area model run with limited computational resources.
- ➤ Internet based access to other regional and international NWP and Satellite derived products.
- ➤ We use satellite products from CMACast (FY Satellite products from China), Indian Satellite products from Indian Meteorological Department

website, GSMaP Global Rainfall observation from JAXA website.

**The Early Warnings for All** Initiative (EW4ALL) of the UN Secretary General has a bold vision of a world in which every individual is protected by life-saving Early Warning Systems (EWS) by 2027.

Maldives is one among the first 30 countries to get support under this initiative.

For a strategic and coordinated approach to achieve these objectives of the EW4All, Maldives has published its Early Warning for All Road Map .

**Upcoming programs and projects to enhance weather observation and Early Warning Capacity in the Maldives:**

➢ Upgrading existing five main observation stations as per the compliance of Global Basic Observation Network (GBON) requirement, funded under Systematic Observation Financing Facility (SOFF).

➢ Establishment of Early Warning Broadcasting System (EWBS) under Digital Terrestrial Television Broadcasting Operational Capacity Improvement Project supported by the Government of Japan.

➢ Expansion of RADAR coverage area under Grant Aid project of the Government of Italy.

➢ Upgrade and expansion of RADAR network under ADB supported project.

➢ Enhancement of NWP modeling capacity and pilot demonstration of Impact Based Forecasting in one selected island in the Maldives, supported by USAID Climate Adaptation Project.

We are working very closely with the 4 pillars of Executive Action Plan nationally lead by National Disaster Management Authority, National Center for Information Technology and Maldivian Red Crescent Society. We also collaborate with regional meteorological offices and various regional and international organizations for enhancement of weather service in the Maldives.

**Main Challenges:**

There is no proper mechanism for accessing LEO Data, especially ASCAT wind data. These are very important to estimate sea state based on prevailing wind speed over ocean where there is huge data gap of in-situ observation.

We also have limited expertise on BigData handling and data visualization for local application. There are challenges in operation, maintenance and calibration of observation instrument. This is partly due to its remote location in different islands separated by ocean. We need to explore the applicability of remote sensing technology and satellite-based Earth Intelligence observations to fill the data gaps in the data sparse area in and around Maldives.