Goal: Understanding the systems of nature and human activity, and contributing to reduce the disaster risks and promote safety and security of communities.

The balance of systems between nature and art is very important for SDGs. In our laboratory, the regional earth system model (G-RSM), which can represent the interaction between atmosphere, ocean, and land processes, and newly developed method using artificial intelligence are utilize to achieve the goal.

**Characteristics of G-RSM**

This model can represent the various atmospheric, ocean, and land phenomena using the physics processes and the downscaling method.

**Atmosphere-Ocean coupled model**

(RSM-ROMS coupling model)

**Atmosphere-land coupled model**

(Land surface schemes)

**Isotope tracer & materials transport model**

(Iso GSM, Iso RSM, and radioactive materials transport system with Semi-Lagrangian scheme)

**Output**

- Local weather
- Global warming
- Past climate
- Water cycle
- Natural disasters
- Ecosystems
- Marine life
- Infections
- Atmospheric environment
- Radioactive materials dispersion

**Solution**

**Data center**

(NCAR, ECMWF, DIAS)

**Input**

Reanalysis data

Observation data (Satellite / Station)

**Global-Regional spectral model (G-RSM)**

**Prediction of local precipitation using AI**

**Prediction of radioactive materials dispersion**