PDM – Lao PDR
Xebangfai and Xebanghieng River Basins, and Flood-Plain Area along Mekong River bank.

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Background

- Lao PDR is a landlocked country, which located in the Southeast Asia between latitude 14 and 23 degree north, and longitude 100 and 108 degree east
- The Country covers an area of 236,800 square kilometers.
- Lao PDR is also lying along middle part of the Mekong, which is the twelfth longest river in the world. It flows through Lao territory from North to the South almost 1,860 Kilometers and forms one of the mightiest river systems of the region
- Due to territory of Lao PDR approximately 70% comprises of mountains and plateaus
- The topography of Lao with combination between mountains and plateaus is form almost 202,000 square kilometers watershed and catchment areas, which are more than 35%, contribute of the whole Lower Mekong Basin runoff
- These geographical features with combination of the storm and monsoon that bring the flood hazards to properties also lives of the people living

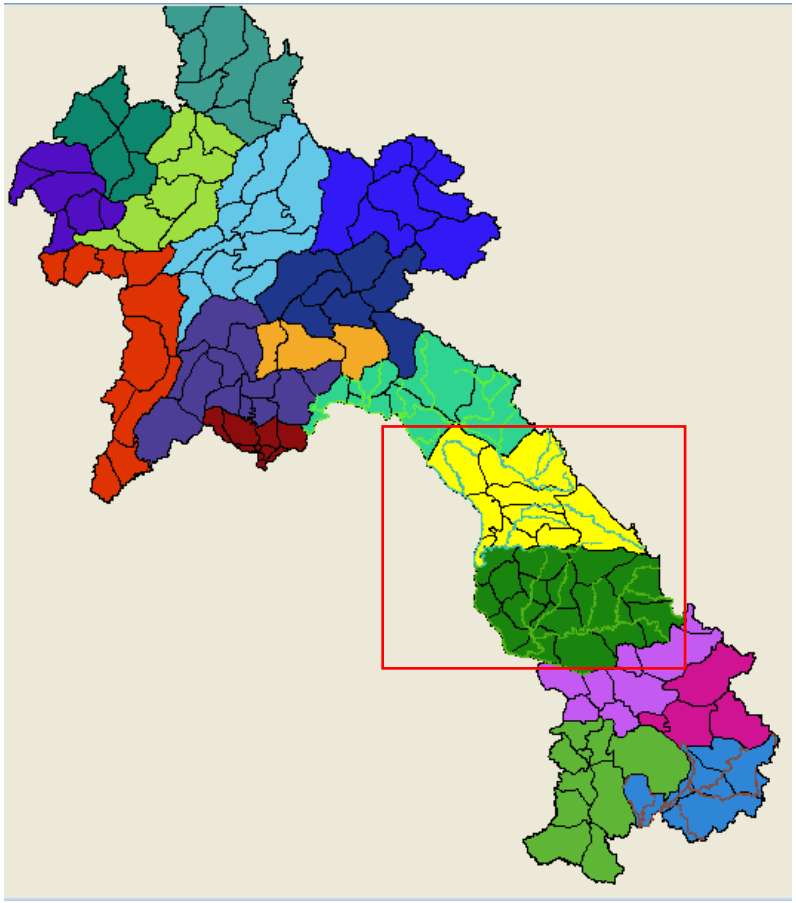
Natural Disaster in Lao PDR






- In Lao PDR droughts and floods are the most common natural disasters.
- Floods have the greatest macro-economic impact on the country and affect a greater number of people, as the areas affected are the primary locations of economic activity and contain 63% of the country population.
- Floods mostly affected central and southern provinces of the country. 27 major floods have occurred over the past 35 years with an average reoccurrence of one every 1.5 years

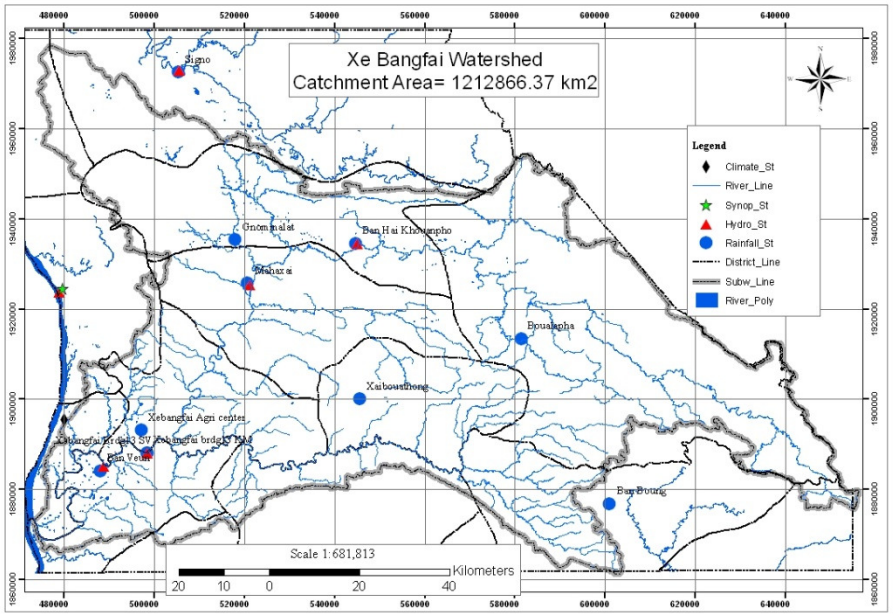
Project Purpose



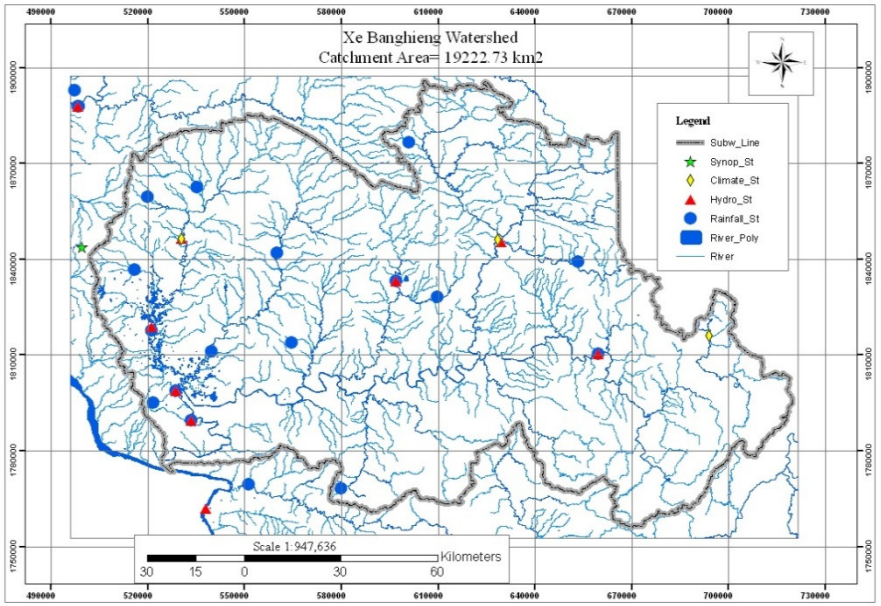
- **Goals:** Reduction of natural disaster by using meteorological and hydrological forecasts and early warning system in Lao PDR.
- **Project Purpose**
  - The Govt of Lao PDR efforts in strengthening the meteorological and hydrological observation networks over the central and southern parts.
  - In order to improve the atmospheric comprehensive observation system in these areas and to enhance the prediction of weather, meteorological and hydrological disaster.
  - It is urgent need improving the meteorological and hydrological forecast and early warning system in

There are urgent needs in the following river basins and flood-plain areas:

Xebangfai River Basin



Xebanghieng River Basin



Project output

- Climate change makes the venerable situations more critical, to address these issues, we need to:
  1. Demonstrate quantitative and qualitative improvement of weather and water cycle observations.
  2. Demonstrate flood and drought early warning capability.
  3. Assess climate change impacts on floods, droughts and water-nexus.
  4. Prototype data and information and sharing systems.
  5. Improve observational, modeling and application capacity.

Strategy how to achieve the output

(1) Prototype near-real time meteorological and hydrological observation and data dissemination systems by coupling in-situ measurements which is used as inputs into weather and flood predictions.

(2) Develop comprehensive in-situ observation data achieve for improving monitoring capability of weather and water cycle, and developing meteorological and hydrological models to be used for early warning.

(3) Develop long-term and comprehensive climate observation data achieve which is used for climate change analysis, climate prediction model bias correction.

(4) Develop hydrological models for forecasting and converting meteorological data to hydrological information.

(5) Prototype real-time data management, modeling and information dissemination systems.

6) Select GCMs which can express the regional climate properly.
7) Implement bias correction and downscaling (statistical- and dynamic-) of the selected GCMs.
8) Develop socio-economic data archive
9) Compare changes of frequency and intensity of flood, drought and water-nexus.
10) Develop an integrated weather and water portal for improving data accessibility and data sharing.
11) Prototype a data integration and analysis and information dissemination
12) Develop training modules of satellite remote sensing, modeling, bias correction and downscaling, make design of training courses on integrated observations, early warning and climate change assessment, and offer the courses.
13) Promote secondment educational programs in collaboration with universities

Activities and Potential collaborators- International projects

- Lead Organizations:
  - **Xebangfai and Xebanghieng River Basins and Flood-Plain over Mekong River bank** in southern part: MONRE (DMH, DDMCC)

- In addition to the Lead Organizations' capacity which has been developed, we will take following actions in collaboration with the organizations and projects as follows:

1. Transmitting rain gauge data to the Lead Organization Data Facility and sharing the data by Internet for producing bias-corrected satellite-based rainfall map to be disseminated to wide communities: WMO/HyCOS, ESA, NASA, NOAA, JAXA, DIAS
2. In-situ and satellite observation data archive: WMO/HyCOS, UNEP/GMES, UNESCO/G-WADI, UNESC-WMO/IGRAC, Tiger heritage, ODA project heritage, AMMA, Reanalysis (ECMWF, NCEP, JMA), ESA, NASA, NOAA, JAXA, CEOS Water Portal, GEOWOW, NASA-SERVIR, DIAS
3. Climate data archive at least past 20 years which correspond to the availability of the GCM model outputs: WMO/HyCOS, Reanalysis (ECMWF, NCEP, JMA), ESA, NASA, NOAA, JAXA, CEOS Water Portal, GEOWOW, NASA-SERVIR, DIAS
4. Develop distributed physically-based hydrological models including simulation ability of

5. Prototype real-time data integration systems for satellite data bias correction, hydrological modeling including data assimilation and information dissemination: ACMAD, ECMWF, National Weather Services, GEOWOW, NASA-SERVIR, UNESCO-IFI, UNESCO-Princeton Univ., DIAS
6. Selection of GCMs which can express the regional climate: PCMDI, DIAS, science communities
7. Bias correction and downscaling: PCMDI, CORDEX, DIAS, science communities
8. Socio-economic data archive: GLOWASIS
9. Assessment of the changes of flood, drought and water-nexus: GLOWASIS, CORDEX, DIAS, science communities

10. Develop an integrated weather and water portal for improving data accessibility and data sharing: CEOS Water Portal, GEOWOW, NASA-SERVIR, DIAS
11. Prototype a data integration and analysis and information dissemination system: CEOS Water Portal, GEOWOW, NASA-SERVIR, DIAS
12. Develop training modules and design and implement training courses : Tiger, UNESCO, NASA-SERVIR, RCMRD, ITC, UNU, UTokyo,
13. Promote secondment educational program in collaboration with universities: ITC, UNU, UTokyo

Thank you very much!