

Identification and Mapping of Solar Energy Potential In Eastern Indonesia Districts

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Research Objectives:

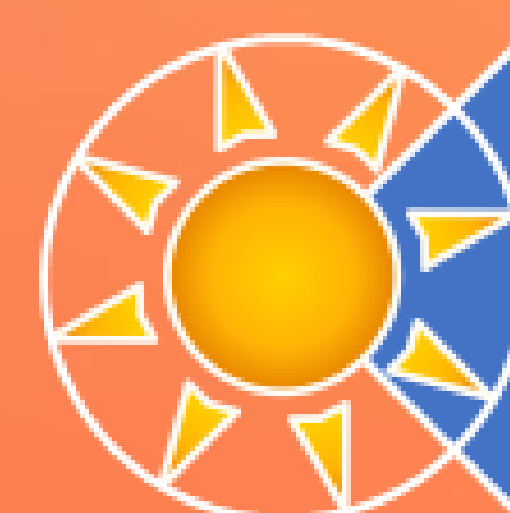
To define solar irradiance model, to forecast solar energy potential, to develop solar irradiation mapping in Eastern Indonesia



Target : 23% in 2025
Real : 11.7%



Eastern Area:
13 Provinces/174 Districts



Average Solar Irradiance
5,1 kWh/m²/hari



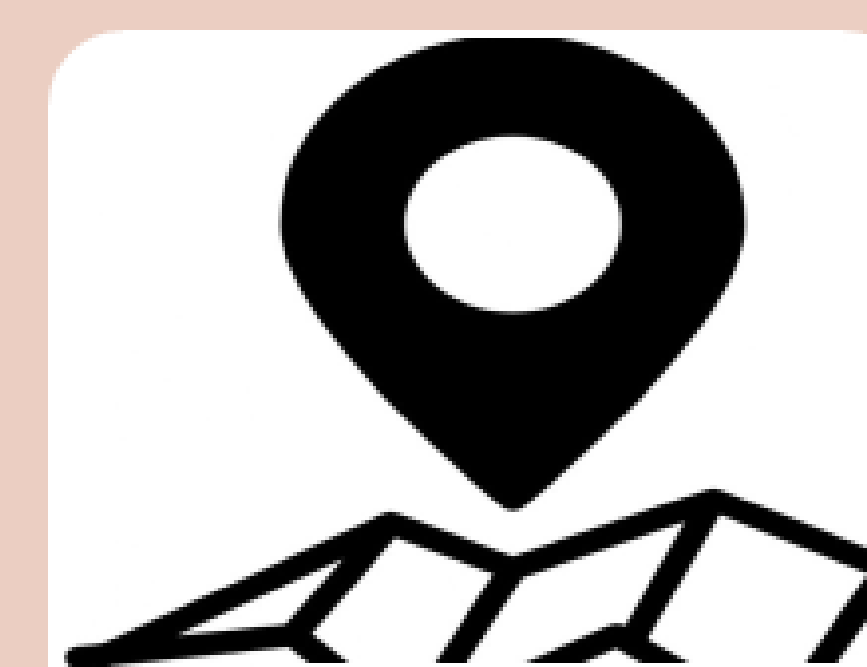
Data Collection



Data Pre-treatment
• Correlation Analysis
• Data division (Training + Testing)

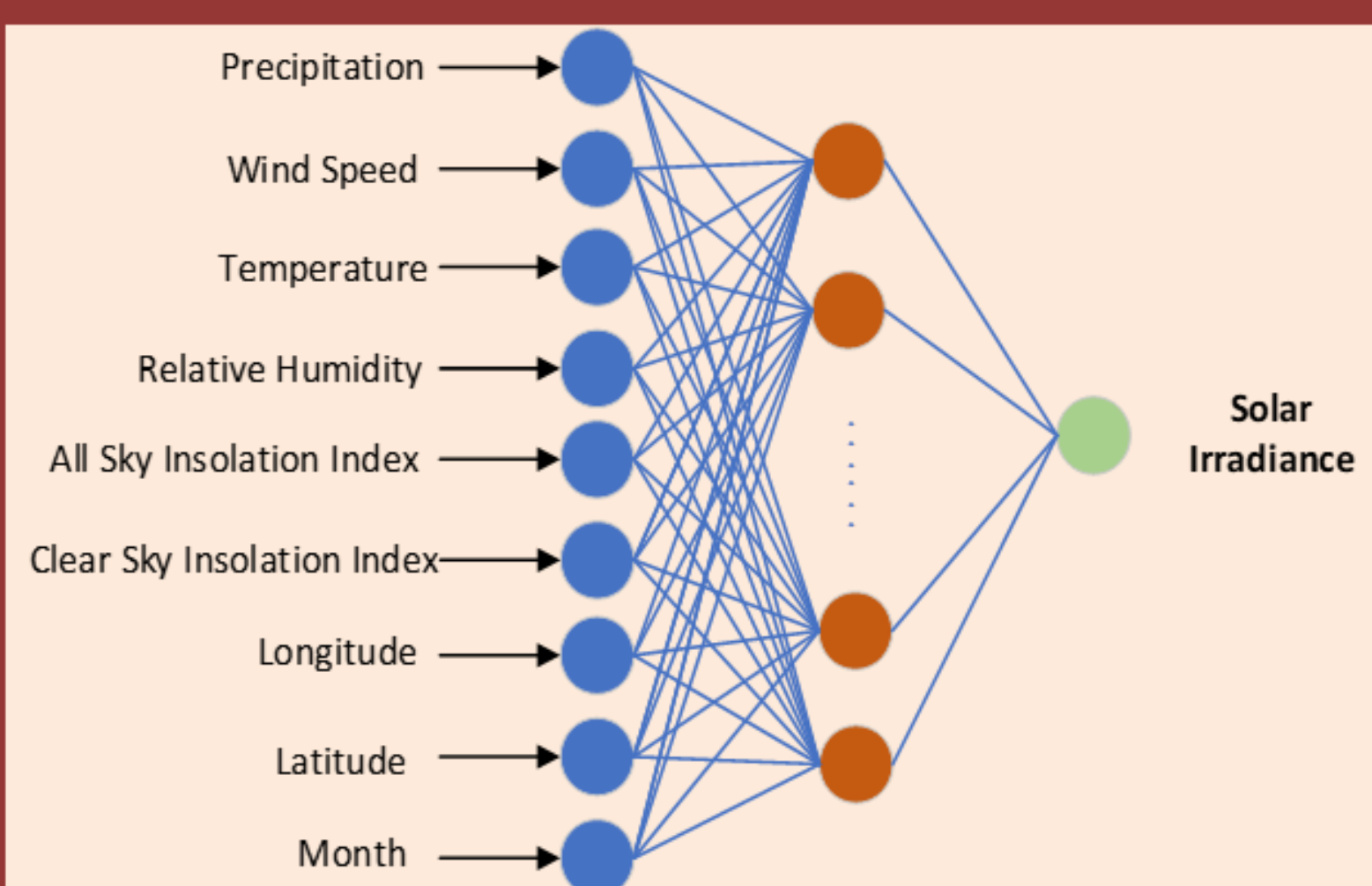


Identification
• Modeling
• Validation
• Forecasting



Mapping

Modeling

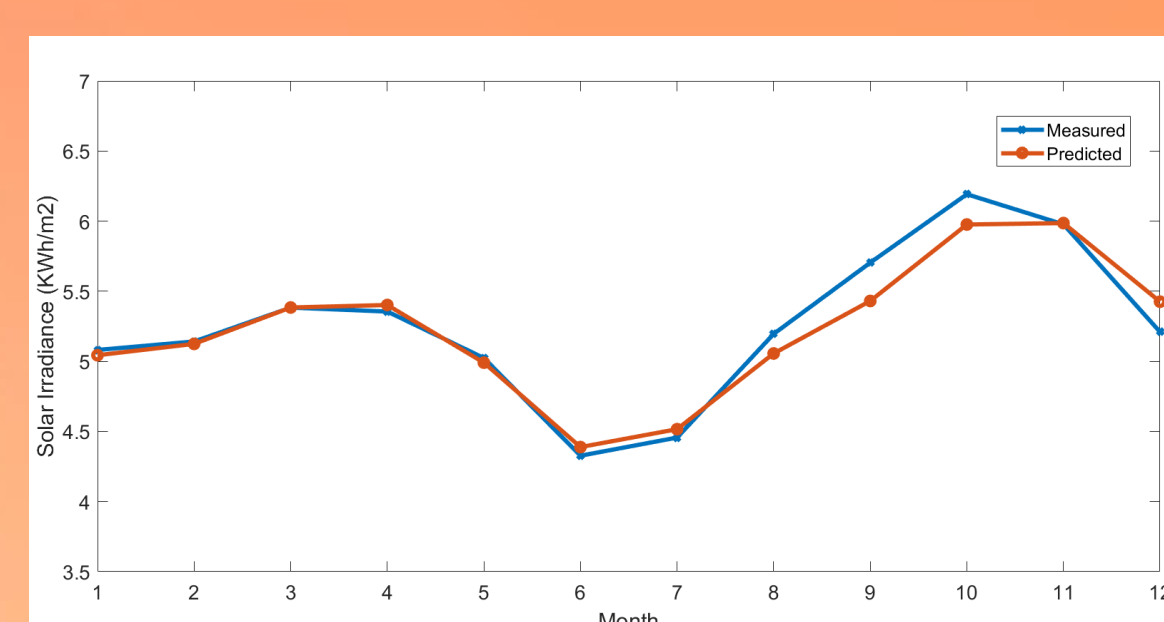


Artificial Neural Network

Validation

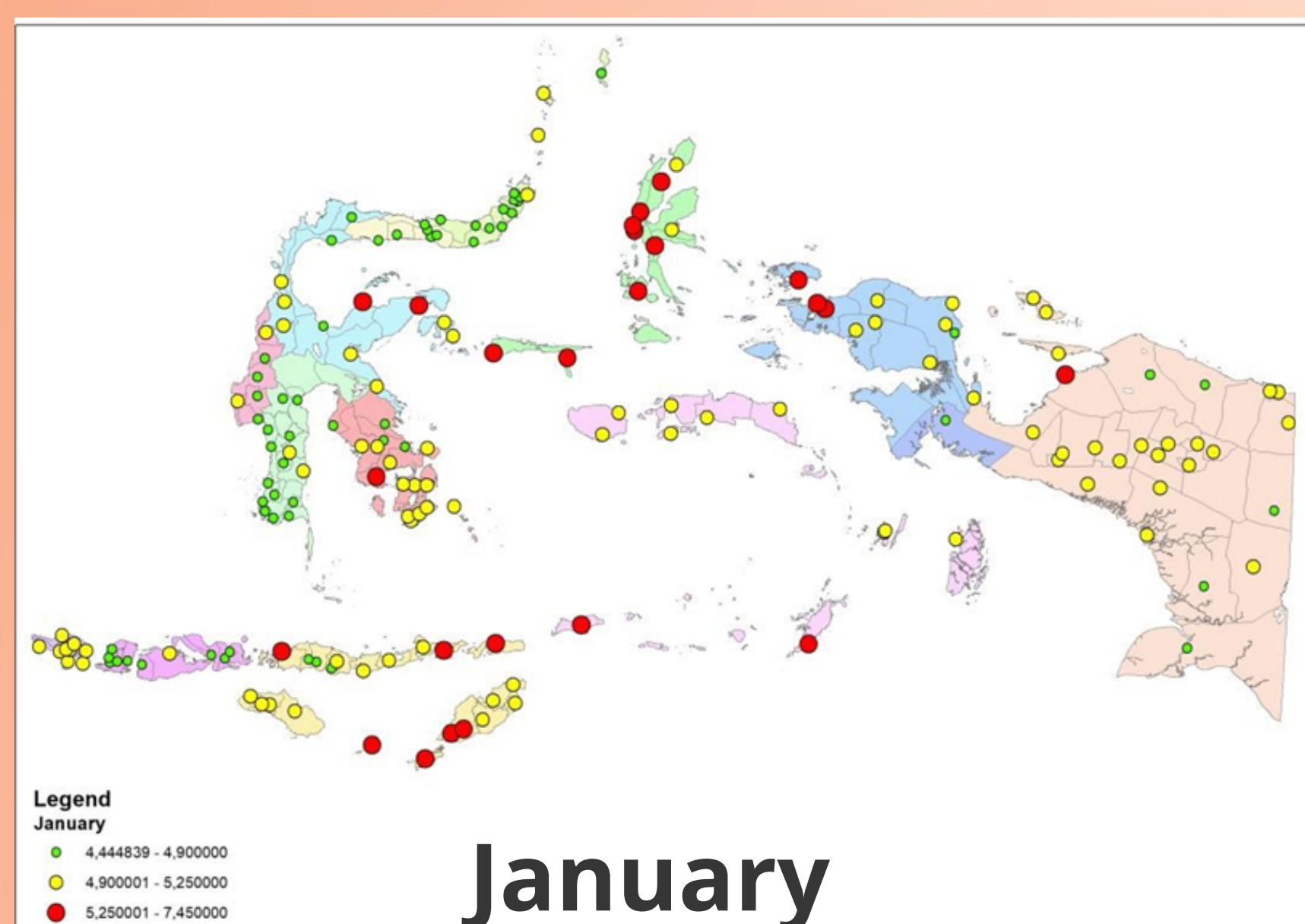
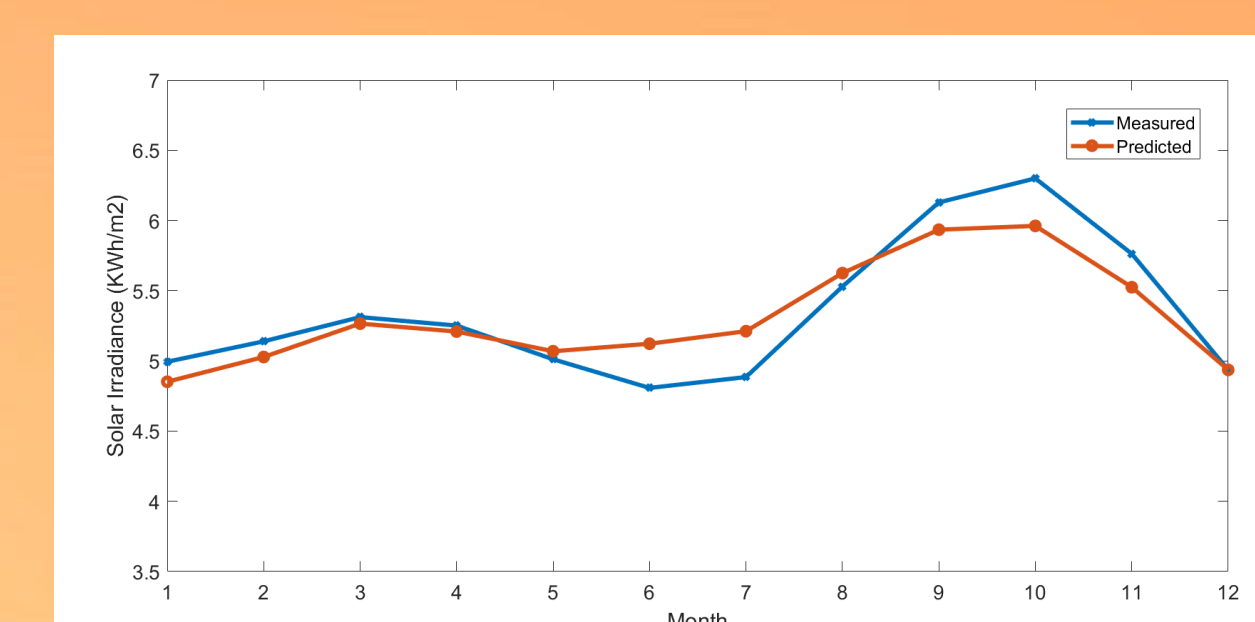
Error Analysis
• MSE
• R-Squared

Forecasting

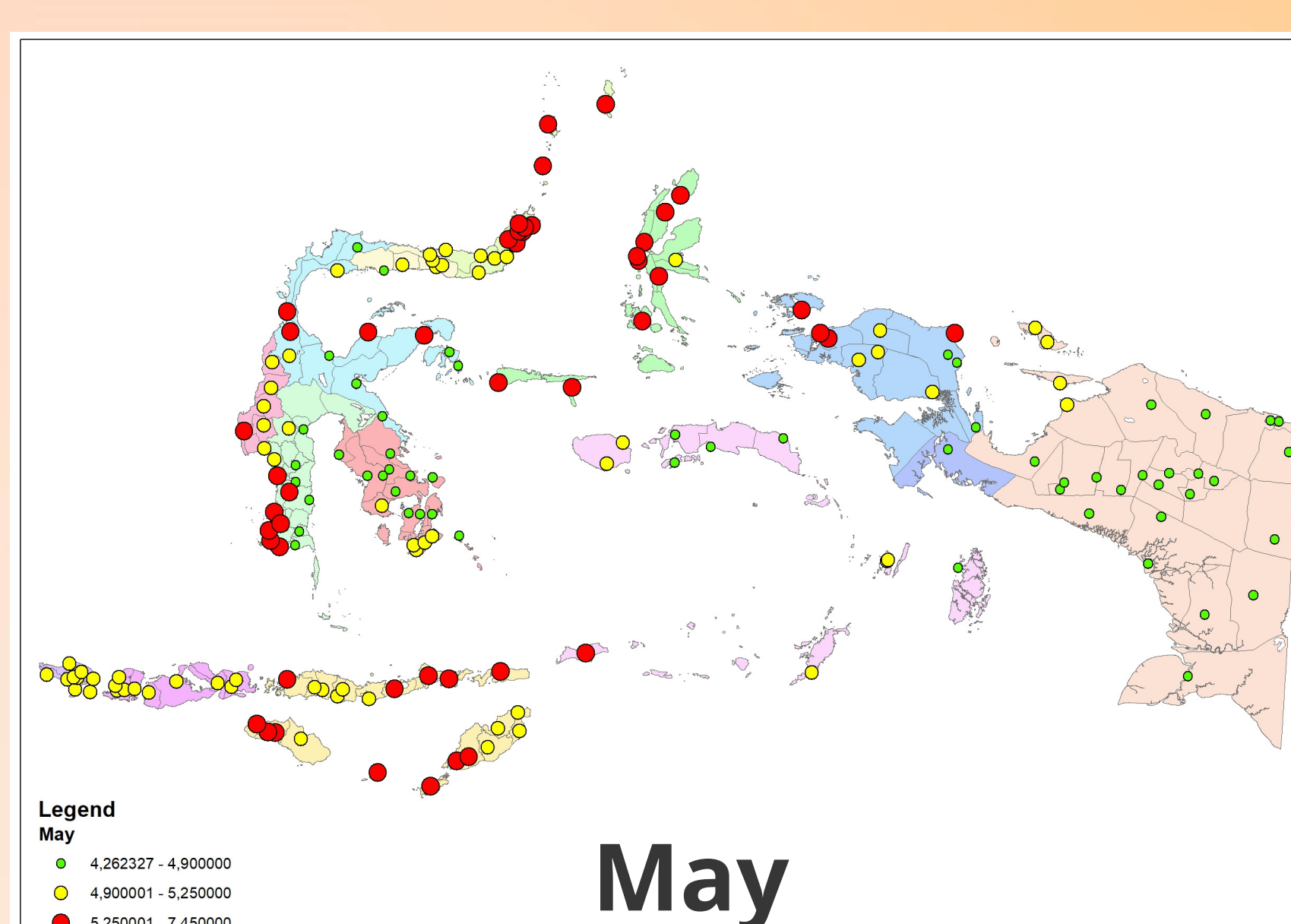


Namlea

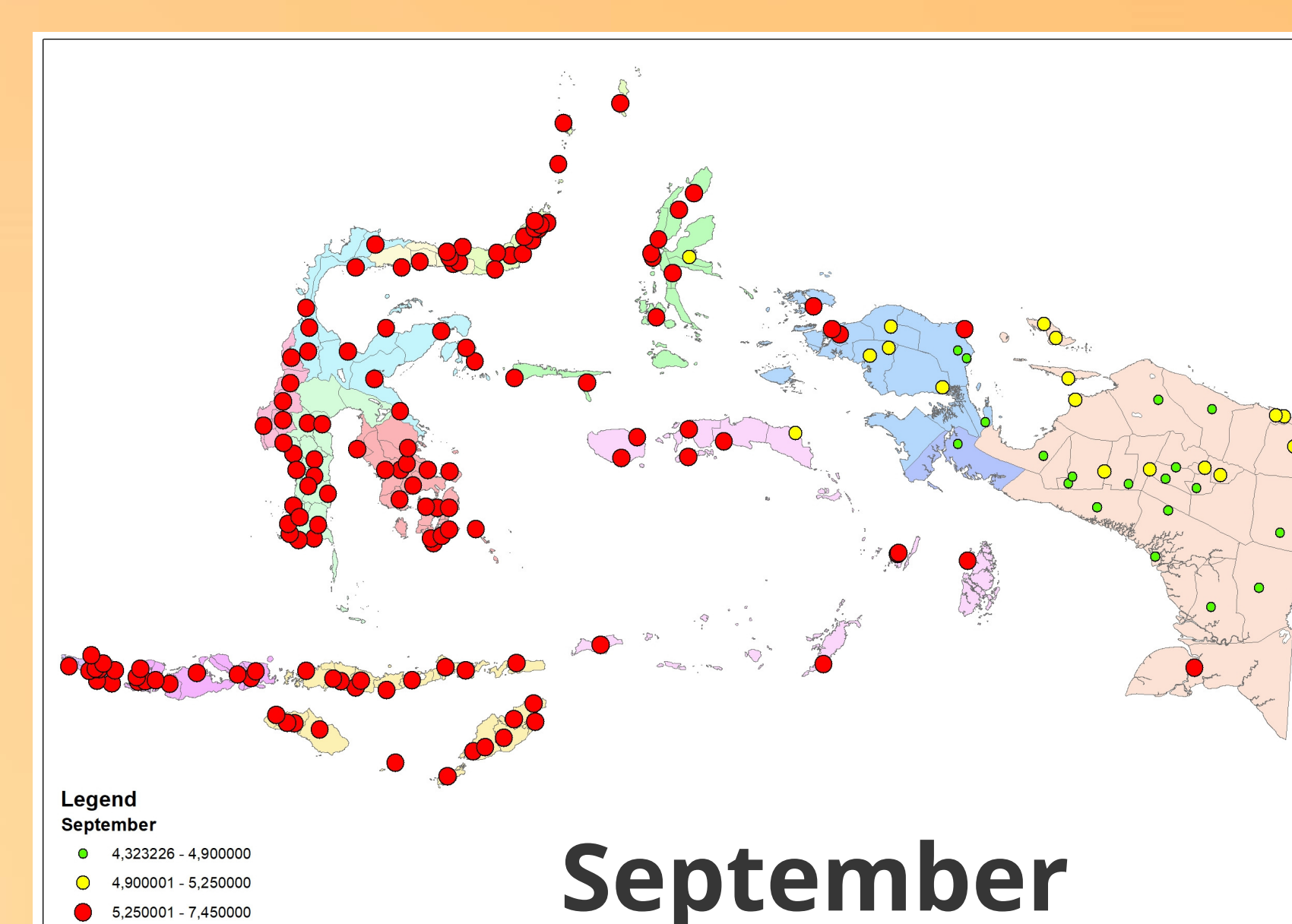
Amlapura



January



May



September

The maps divided the areas into: high irradiance (>5.25 KWh/m²), medium irradiance (4.9 - 5.25 KWh/m²) and low irradiance (<4.9 KWh/m²). Maluku and Nusa Tenggara islands are consistently provide high solar irradiance during all seasons. Sulawesi and Bali island have medium to high solar irradiance level during the period of dry season (April to October). Furthermore, districts in Papua island have the low to medium solar irradiance level.

If medium to high irradiance level could fulfil the requirement of solar power generation, it can be concluded that at least 2/3 of areas in Eastern Indonesia are suitable to be selected as solar sites.