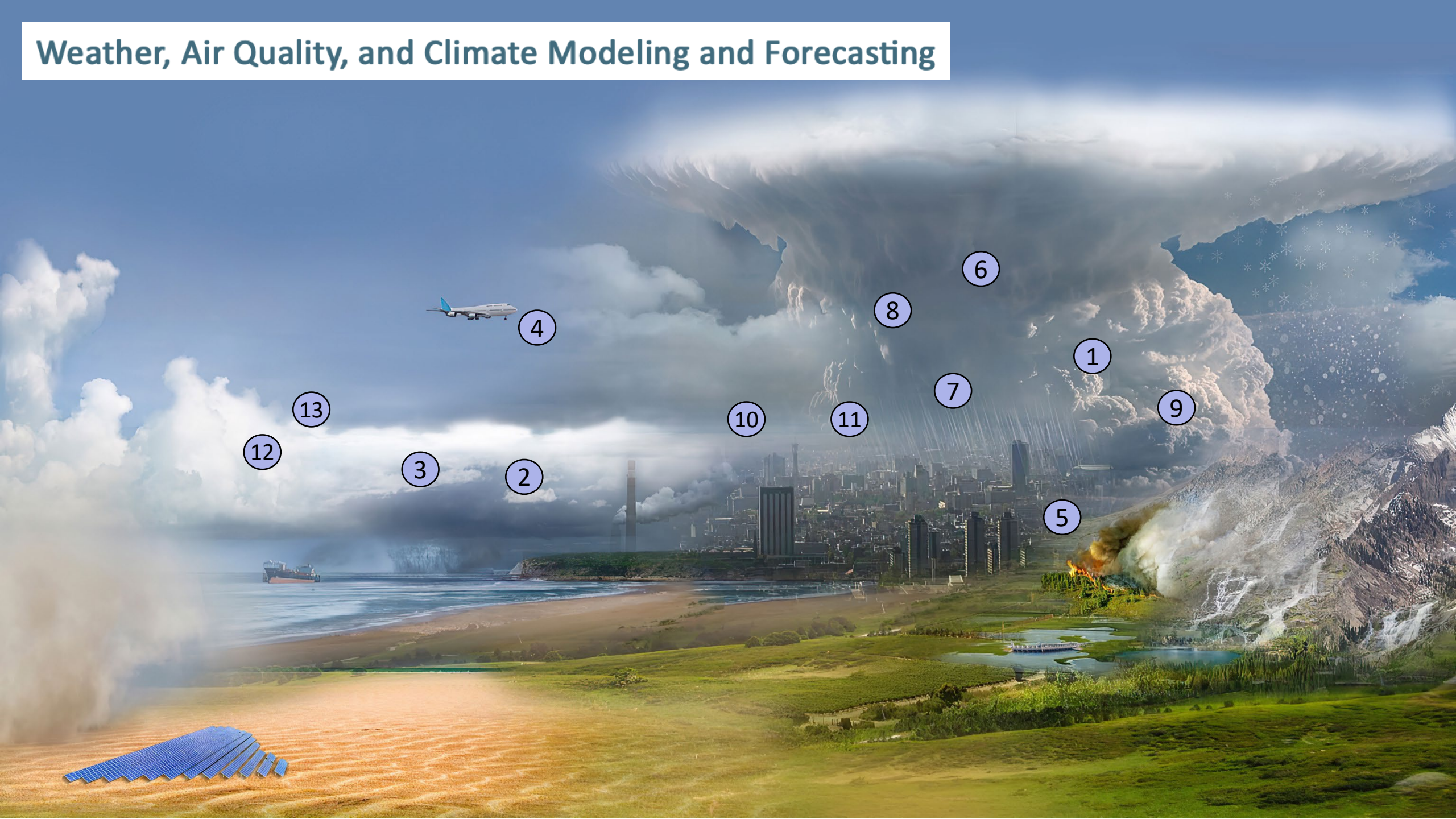


AOS Applications



Weather, Air Quality, and Climate Modeling and Forecasting



Weather, Air Quality, and Climate Modeling and Forecasting

 WEATHER, AIR QUALITY, AND CLIMATE MODELING AND FORECASTING »

- 1 **Weather Forecasting:** Tropical cyclone development and forecasting
- 2 **Weather Forecasting:** Monitoring and nowcasting of convective storms and hazards
- 3 **Weather Forecasting:** Atmospheric rivers
- 4 **Weather Forecasting:** Aviation hazards related to low clouds and fog, smoke, dust or icing
- 5 **Weather Forecasting:** Pre-fire weather monitoring for wildfire response and management
- 6 **Numerical Weather Prediction:** Representation of initial conditions and data assimilation
- 7 **Numerical Weather Prediction:** Coupling of aerosols within numerical weather prediction modeling
- 8 **Numerical Weather Prediction:** Development and verification of cloud/convective parametrizations
- 9 **Operational Air Quality Forecasting:** Tracking dust, wildfire smoke, and volcanic plumes
- 10 **Air Quality Forecasting:** Forecast initialization and verification
- 11 **Aerosol & Precipitation Interactions:** Air quality modeling and forecasting (transport, scavenging, wet deposition, dry deposition, chemical transformation)
- 12 **Climate Modeling:** Parametrization of clouds, particle distribution for aerosols and precipitation
- 13 **Climate Modeling:** Global climate smoke aerosol transport and aerosol and aerosol/cloud feedback

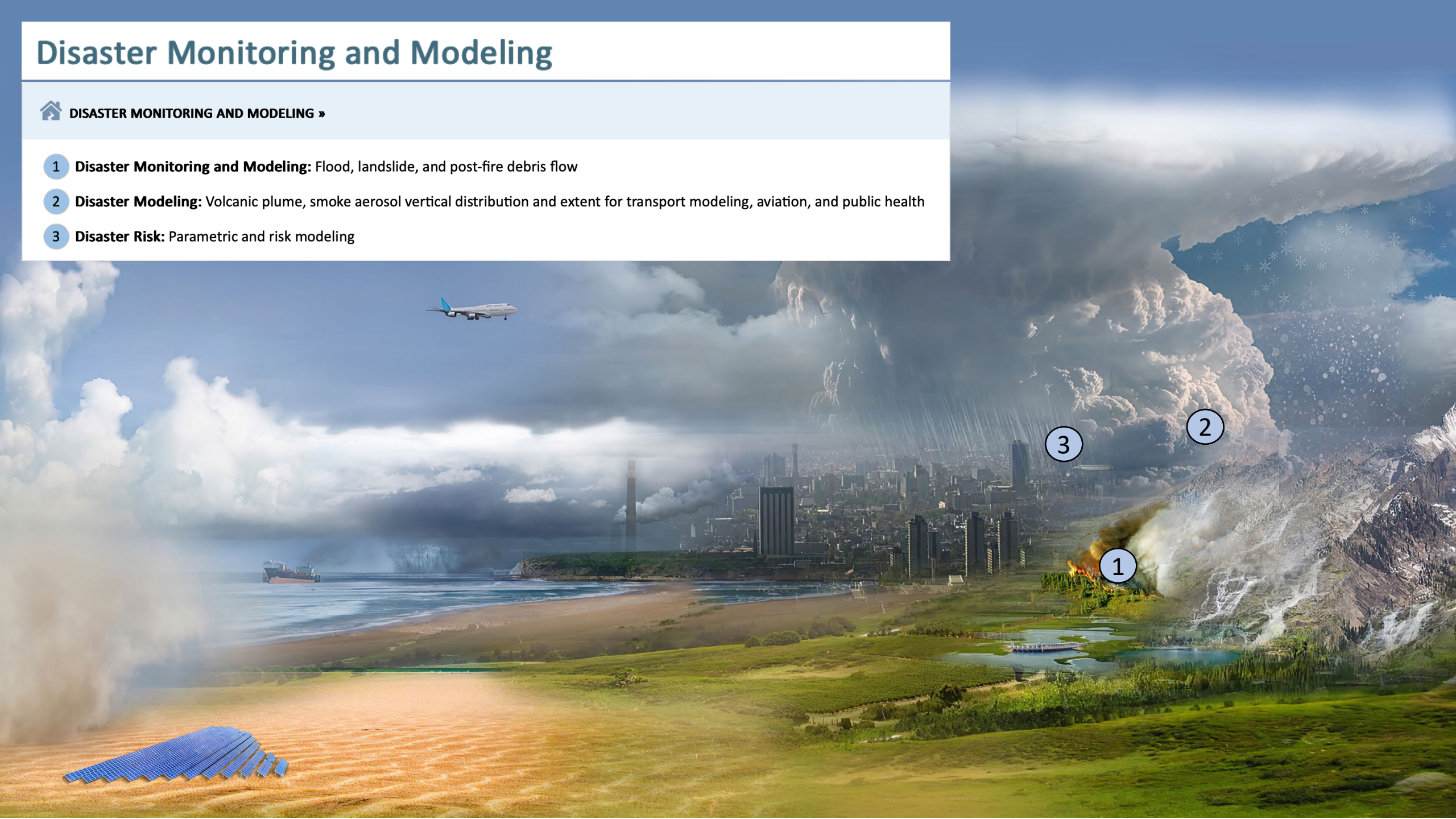


Disaster Monitoring and Modeling



DISASTER MONITORING AND MODELING »

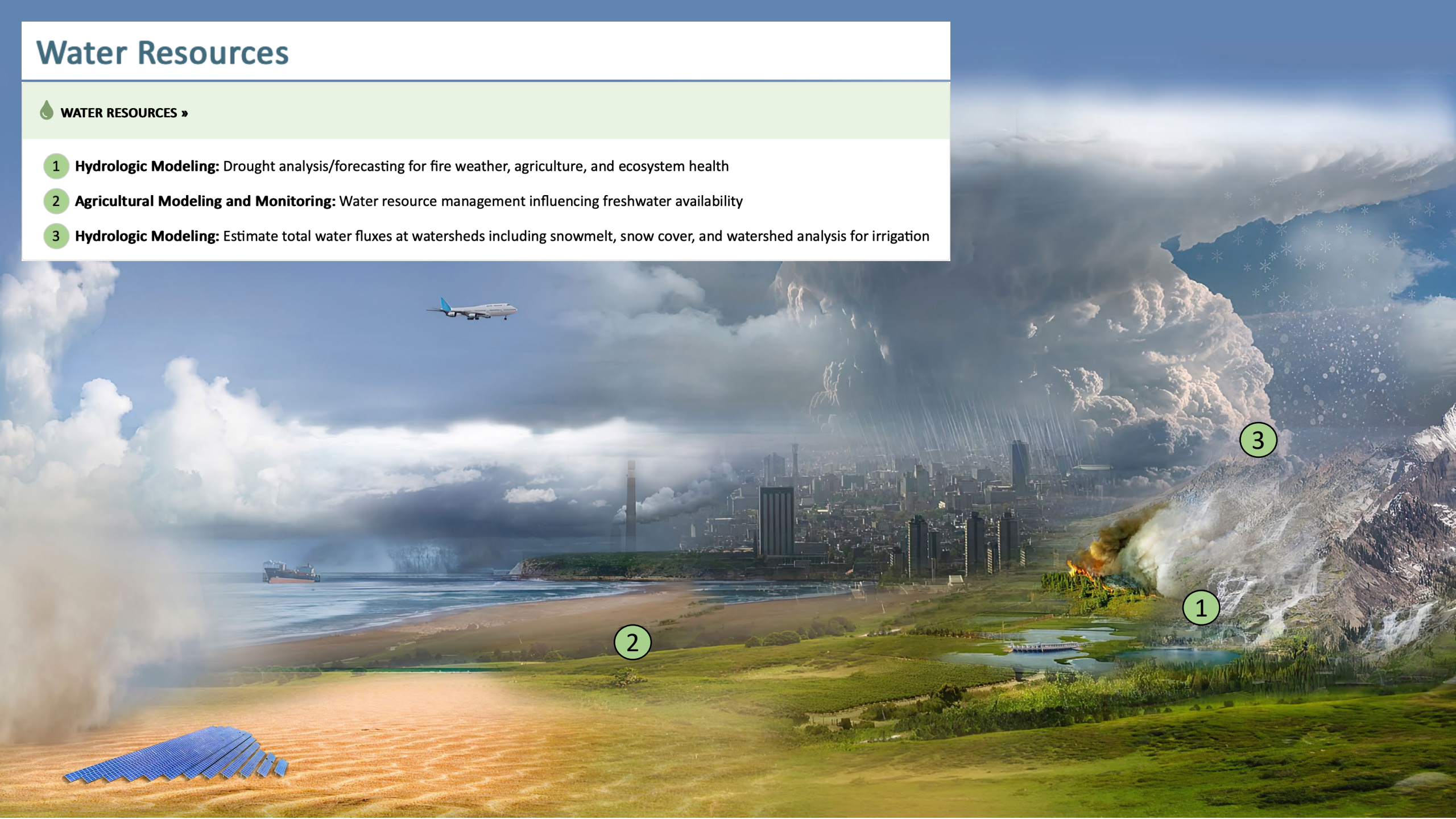
- 1 **Disaster Monitoring and Modeling:** Flood, landslide, and post-fire debris flow
- 2 **Disaster Modeling:** Volcanic plume, smoke aerosol vertical distribution and extent for transport modeling, aviation, and public health
- 3 **Disaster Risk:** Parametric and risk modeling



Water Resources

WATER RESOURCES »

- 1 **Hydrologic Modeling:** Drought analysis/forecasting for fire weather, agriculture, and ecosystem health
- 2 **Agricultural Modeling and Monitoring:** Water resource management influencing freshwater availability
- 3 **Hydrologic Modeling:** Estimate total water fluxes at watersheds including snowmelt, snow cover, and watershed analysis for irrigation

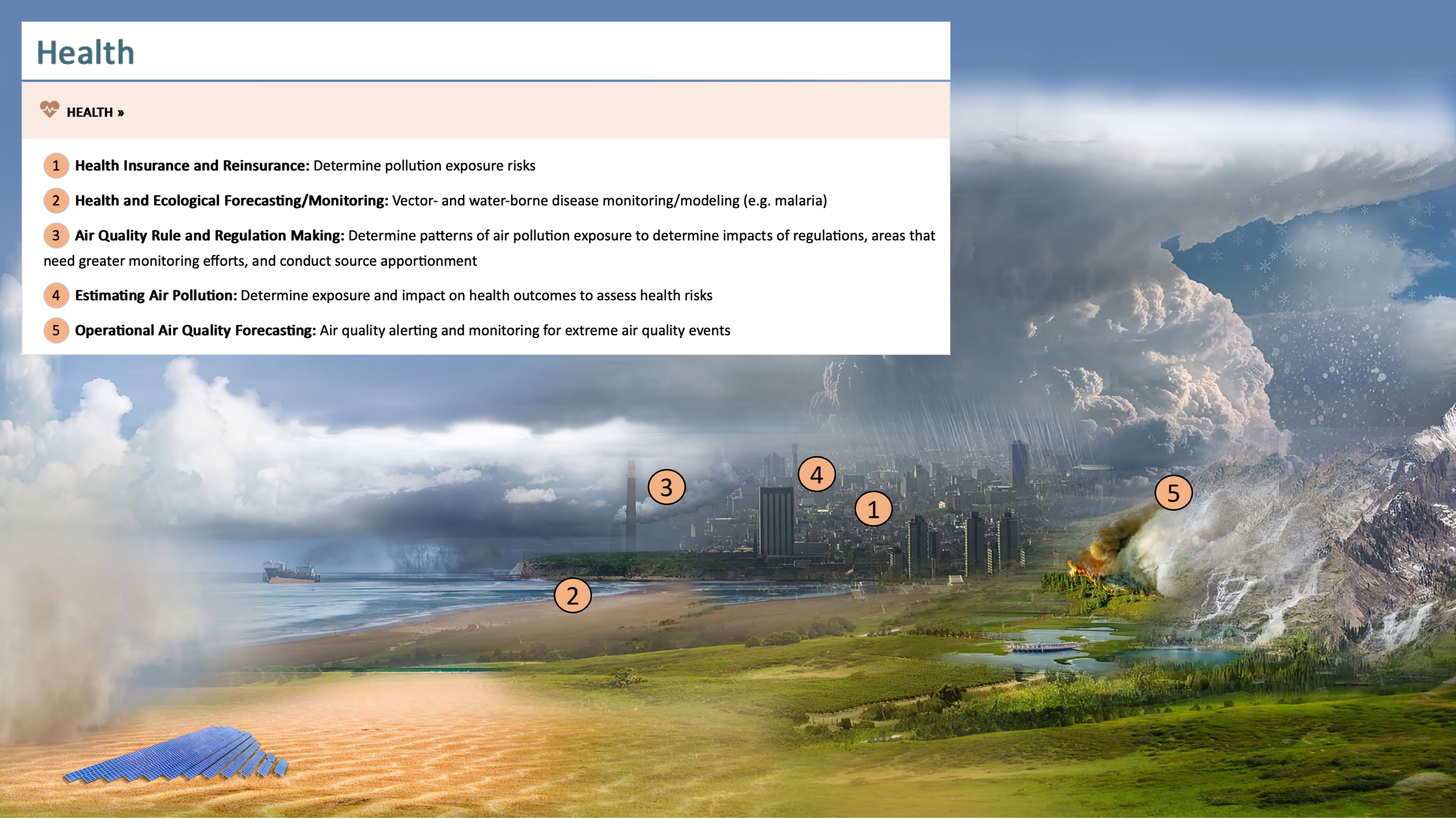


Health



HEALTH »

- 1 **Health Insurance and Reinsurance:** Determine pollution exposure risks
- 2 **Health and Ecological Forecasting/Monitoring:** Vector- and water-borne disease monitoring/modeling (e.g. malaria)
- 3 **Air Quality Rule and Regulation Making:** Determine patterns of air pollution exposure to determine impacts of regulations, areas that need greater monitoring efforts, and conduct source apportionment
- 4 **Estimating Air Pollution:** Determine exposure and impact on health outcomes to assess health risks
- 5 **Operational Air Quality Forecasting:** Air quality alerting and monitoring for extreme air quality events



Infrastructure and Development

INFRASTRUCTURE AND DEVELOPMENT »

- 1 **Energy Planning:** Hydropower potential and modeling
- 2 **Energy Planning:** Estimate radiative fluxes for solar insolation and estimate wind availability for wind energy production
- 3 **Transportation and Logistics:** Assess supply chain, road network maintenance, and urban planning concerns

