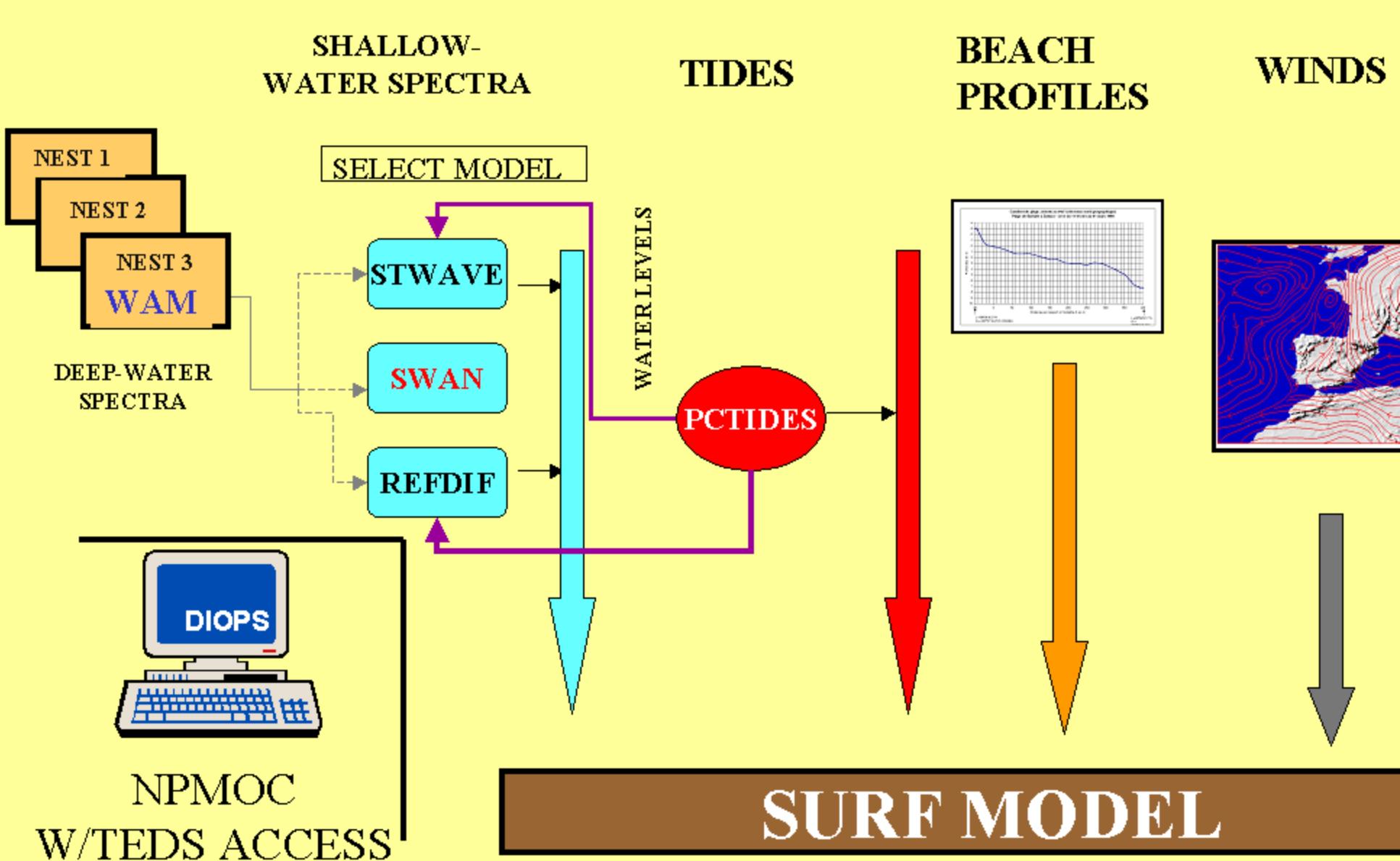


THE DISTRIBUTED INTEGRATED OCEAN PREDICTION SYSTEM (DIOPS)

Richard Allard[allard@nrlssc.navy.mil], Linwood Vincent (Naval Research Laboratory), John Christiansen, Tom Taxon (Argonne National Laboratory), Steve Williams, Sean Reilly, Cara Escobar (Anteon, Inc), and Larry Jendro (New Age Systems)

OBJECTIVE: Provide the capability to setup, run and a distributed coupled wave, tide and surf modeling system using state-of-the-art physics-based numerical prediction models.

DISTRIBUTED INTEGRATED OCEAN PREDICTION SYSTEM (DIOPS 1.0)



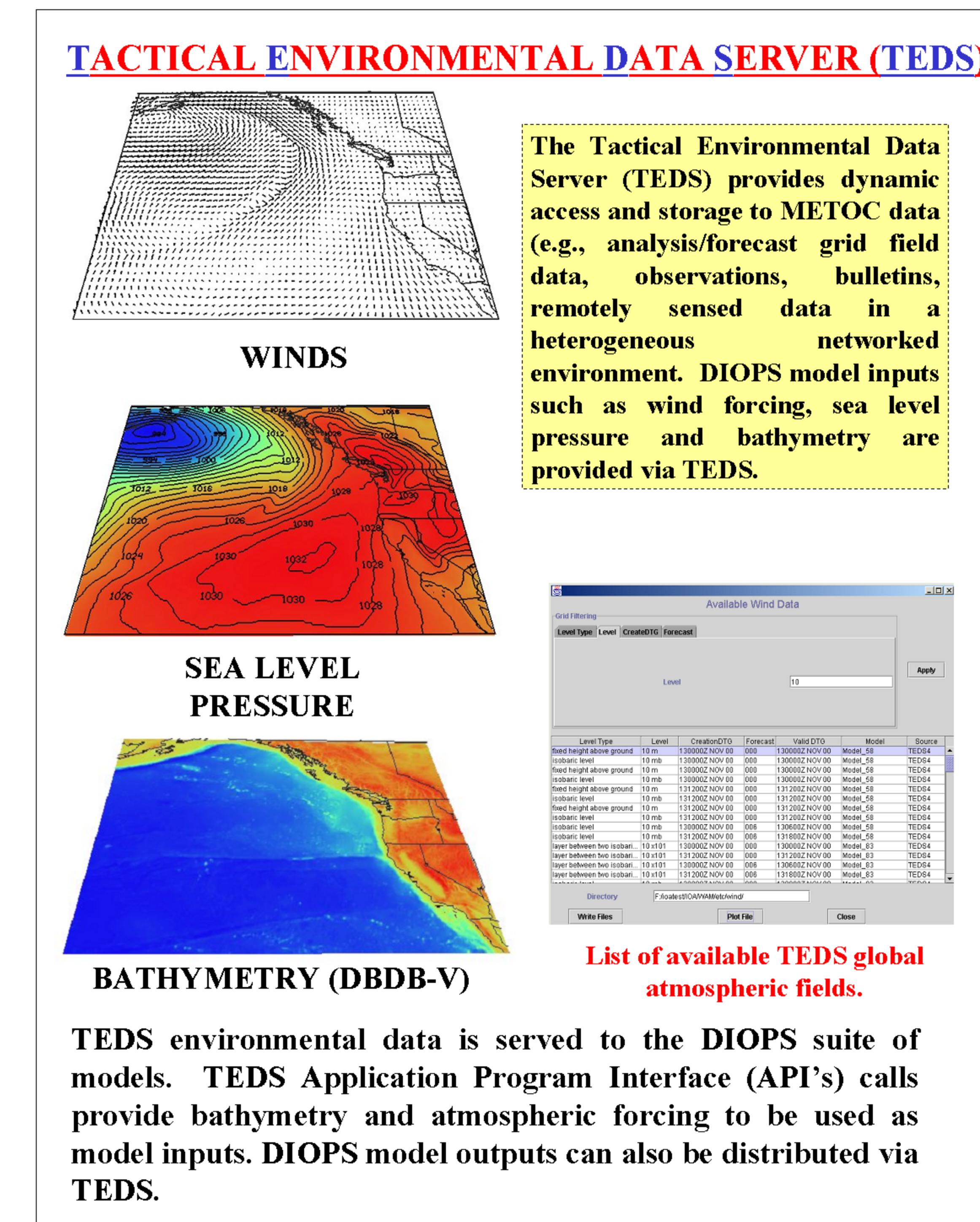
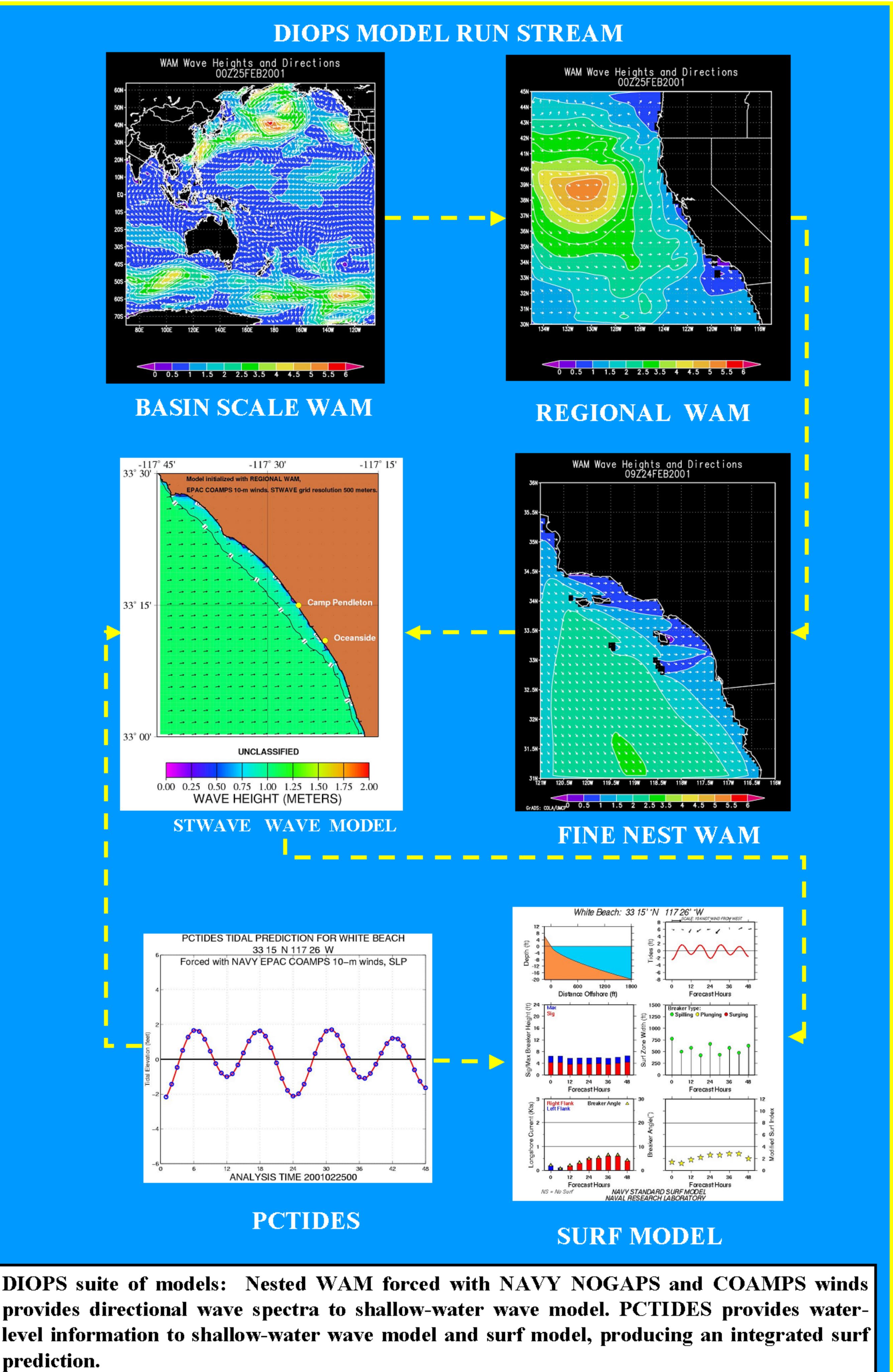
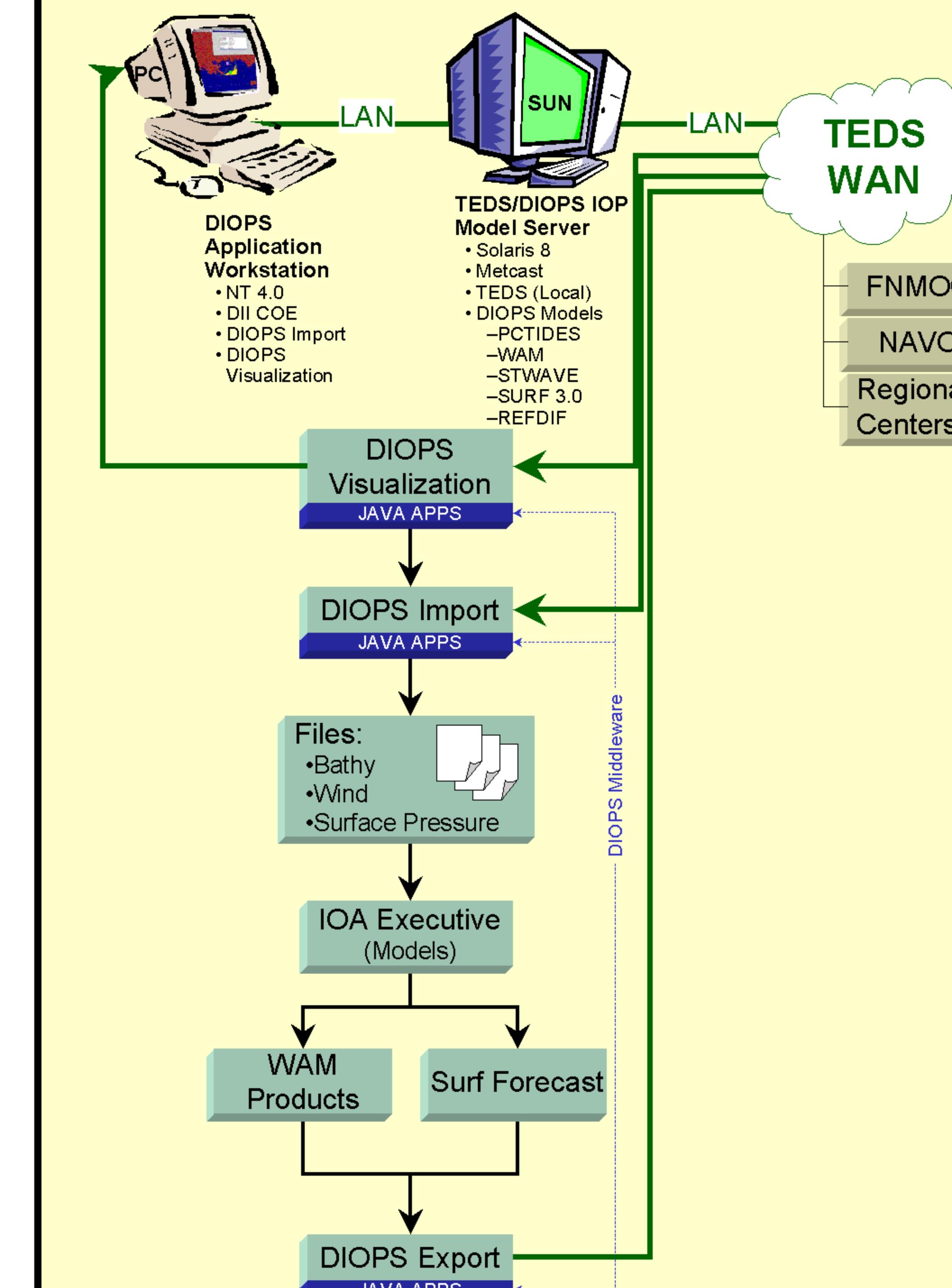
Deep-water wave model (WAM) is forced with US Navy winds (NOGAPS and/or COAMPS) in nested fashion. WAM wave spectra are used to initialize shallow-water wave model (STWAVE, REFDF or SWAN) depending on application desired. A tide model adjusts local bathymetry; refracted wave spectra and beach profiles are fed to Navy Standard Surf Model. A Beta-test site for DIOPS has been established at the Naval Pacific Meteorology and Oceanography Center (NPMOC-SD) in San Diego. During FY01, the Simulating Waves Nearshore (SWAN) will be added to DIOPS.

IOA Scenario Executive lets operator select model (in this example, PCTIDES is chosen); setup model and run the model.

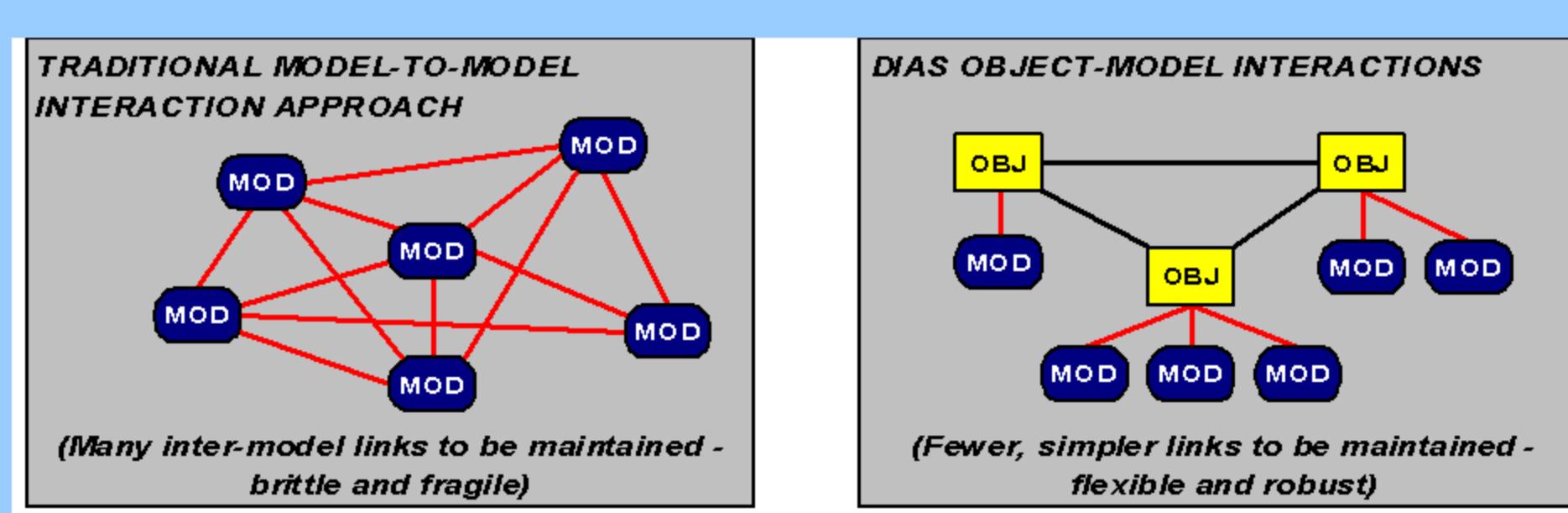
Define grid parameters, activate nesting option.

Choose to assimilate International Hydrographic Organization (IHO) tidal constituent data; save model output every 3 hours.

DIOPS Architecture



The Dynamic Information Architecture System (DIAS) developed at Argonne National Laboratory is a software framework and infrastructure which facilitates building and maintaining complex multidisciplinary simulation systems. The Integrated Ocean Architecture (IOA) utilizes DIAS to provide a flexible, extensible virtual maritime environment.



In DIAS, models communicate only with domain objects, never directly with each other. This makes it easy to add models, or swap alternative models in and out without re-coding—thus DIAS scales very well to increasingly complex problems.

Accurate surf forecasts are important in planning and carrying out amphibious operations. In this example, a Landing Craft Air Cushion (LCAC) comes ashore of "Red Beach" on Sardinia, Italy during Exercise Dynamic Mix '98, an Annual exercise involving ships and personnel from NATO.



SUMMARY

The Distributed Integrated Ocean Prediction System (DIOPS) is a wave, tide and surf forecasting system which has been developed to provide the U. S. Navy the capability to produce surf forecasts to support amphibious operations and mission planning. The modular approach allows individual components to be replaced or upgraded as improvements in the R&D community become available. A DIOPS Beta-test site is being established at NPMOC-San Diego where DIOPS will be installed and staffed with a full-time scientist to work with METOC personnel. NPMOC users will provide feedback to the developers so that the model job-stream, inputs, outputs, diagnostics and products can provide maximum added value to their wave and surf products. Training and documentation requirements for the operational system will be developed based on scientist/user interactions.

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