

Problem Solving Environment for Flood Forecasting

L. Hluchy, O. Habala, B. Simo,

J. Astalos, V. D. Tran, M. Dobrucky

Abstract

This paper presents a prototype of the Collaborative Problem Solving Environment for Flood Forecasting. Flood forecasting is a complex problem that requires cooperation of many scientists in different areas. To enable this cooperation in a manner comfortable to hydrometeorological experts, a part of the CrossGrid project is aimed towards developing a PSE, whose prototype is described here. The PSE consists of a cascade of simulation models, a storage system for computed and measured data and other used datasets, a web-based portal with collaboration tools and a powerful computation facility. The whole system is tied together by Grid technology and is used to support a virtual organization of experts, developers and users.

Keywords

Grid computing, Simulation, Problem Solving Environment, Flood prediction

Introduction

In this paper we present a prototype of a collaborative problem solving environment (Galloopoulos, 1994) intended to support a virtual organization for flood forecasting. Over the past few years, floods have caused severe damages throughout the world. Most of the continents were heavily threatened. Therefore, modeling and simulation of flood forecasting in order to predict and to make necessary prevention is very important.

The system - whose prototype is described here - employs the Grid technology (Foster, 1999) to seamlessly interconnect the experts, data and computing resources needed for quick and correct flood management decisions. Main component of the system is a cascade of simulation models used to predict weather, hydrological river status and hydraulic events in flooded areas. The prototype also includes some basic communication tools, enabling its users to cooperate. In recent years, since