Global Ocean Wave Climatology

Overview
Information about various aspects of the climate at specific longitude and latitude points was gathered and stored in GRIB files. The retrieval of this data was costing too much time and was hard to understand. A more efficient and quick way of retrieving data, as well as a better way to represent it was needed.

Objectives
We wanted to mainly achieve two things with our solution:
- Easier readability of the retrieved data, so that anyone can understand it.
- Quicker retrieval times and the ability to add to expand the data as needed.

Approach
- Met with the sponsor at the Naval Base to get an idea of what was already available to us for use, what machine would be running our program, and to get a better idea of why our program is needed.
- Analyzed what pre-existing products we should use. Decided on Microsoft products because it is what he sponsor is using and for the simple connectivity between Microsoft C# and Microsoft SQL Server.
- Split the team into three groups: GUI Design, Database Construction, Back-end
- GUI Design group drew out general idea of what the GUI would look like, got sponsor approval, and constructed it using C# Forms.
- Database Construction group drew out a plan for what tables would be needed based on what information the GRIB files contained, confirmed it with the sponsor, and created a database with Microsoft SQL Server 2010.
- Back-end group connected the program with the server, giving it the ability to pull data directly to the GUI.
- To ensure reliability, system tests were ran with input and expected output vs. input and actual output.

Outcomes
- The sponsor will save hours, if not days, of waiting time when retrieving data.
- The data is easier to understand, read, and store as needed.
- The project makes the future implementation of new features and the addition of more data simpler with the use of an expanding database.