Glider Mission planning software:

Our mission planning software can be used to get an optimal sequence of waypoints for Autonomous underwater vehicle (AUV) from a complete graph having traveling cost on each edge generated from a historical ocean current data. This application uses *sates of the art* solvers including Pseudo Boolean (PBO), Incremental Satisfiability Modulo Theories (SMT) and Integer Programming solvers for optimizing and finding the best route (tour) form our mission planning problem. This application can be used for pre analyzing, processing and finding the best waypoints for survey gliders in account with ocean current data. The main goal of this software is to provide decision making support for those personal dealing with glider path planning and mission planning. They can use our software stack to find out the ordered sequences of visiting points for a glider and can set those ordered sequence points before launching it to ocean. Our software package is hi

**Drafts:**

This can be used to analyzing generate multi-vehicle robotic surveys for

large-scale dynamic features in the coastal ocean. Our science

application targets Harmful Algal Blooms (HABs) which have

significant societal impact to coastal communities yet are poorly

understood ecologically. Bloom patches can be large spatially

(in kms) and unpredictable in their extent. To understand

their ecology, we need to be able to bring back water samples

from the ‘right’ places and times for lab analysis. In doing

so, we target hotspots representative of intense biogeochemical

activity for such sampling. Our approach uses remote sensing

data to detect such hotspots using ocean color as a proxy,

and advectively projects these patches spatio-temporally using

surface current data from HF Radar stations. Experiments with

satellite and Radar data sets are promising for large, coherent

blooms. We show how these predictions can be used to select

an appropriate sampling trajectory for an AUV.