

The background of the image is a vast, calm body of water at sunset. The sky is filled with large, wispy clouds colored in shades of orange, yellow, and pink. In the foreground, numerous small, dark ice floes are scattered across the water's surface. On the far left, a dark, silhouetted shape, possibly a rock or a small island, is visible against the bright sky.

COAWST User's Guide

Third Edition

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The *model2roms* toolbox (<https://github.com/trondkr/model2roms>) was created by Trond Kristiansen (me@trondkristiansen.com) and is licensed under a *MIT License*.



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Thank you.



Author's note

This guide is designed to assist new users to configure and use the Coupled Ocean-Atmosphere-Wave-Sediment Transport System (COAWST). The main idea behind this guide is to teach the necessary steps to use COAWST, starting with its installation, then a simulation of a test case and then, the configuration of your own project. To achieve this goal, we use several programming languages, such as Fortran, Python and MATLAB. In the future we intend to adapt all scripts to a free programming language.

When we started writing this guide, we wanted to pass on our expertise of using a numerical modeling system that is considered the state of the art in our field, throughout reading, understanding how it works and how to use the COAWST, allying theory with practice.

However, a major difficulty in this process was the generation of the boundary and initial conditions for the oceanic model, the Regional Ocean Modeling System (ROMS), which rely on paid software. To get around this problem we chosed to work with the *model2roms* toolbox package. This set of routines was developed in Python and Fortran language by Trond Kristiansen¹.

We emphasize that in some chapters, the reader will find how to use the COAWST in a cluster that is available for use by the Ocean and Atmosphere Studies Laboratory (LOA) of the National Institute for Space Research (INPE). This is a high performance computing system that allows to use softwares on parallel computing processes. Therefore, this guide will serve as an inspiration for COAWST users to implement their projects on their own computational systems.

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We wish you a good reading and success in your research.

The authors.



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