

Hands-On

Mapping of vector data: Wind, Wave and Currents

Training Course on
'Marine GIS for Operational Oceanography'

January 18-22, 2016

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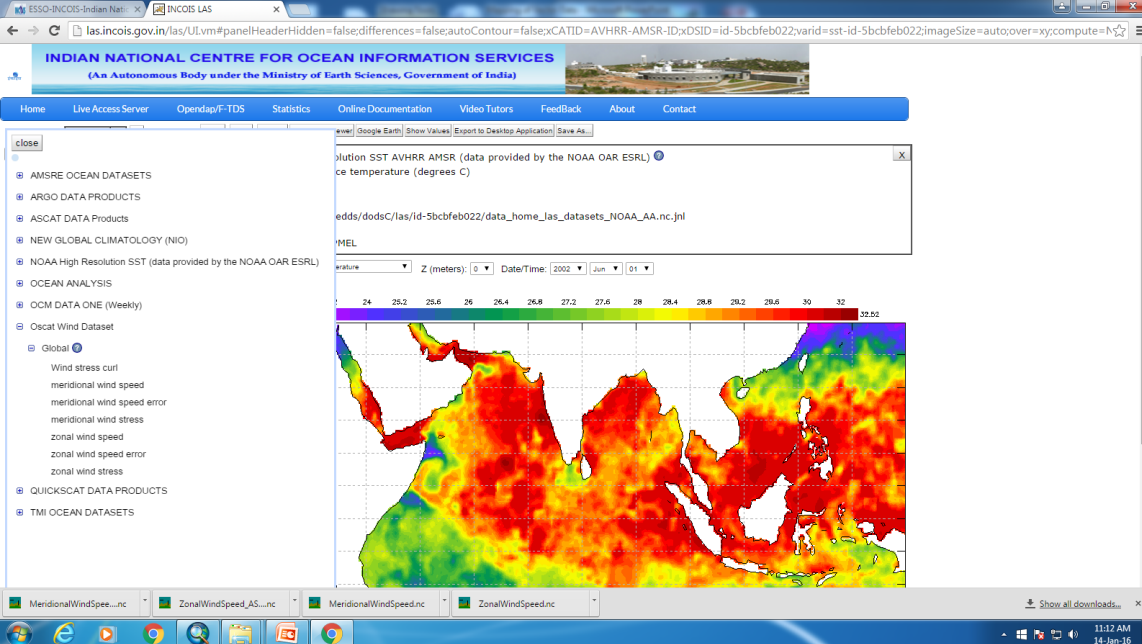
International Training Centre for operational Oceanography(ITCO),

INCOIS, Hyderabad, India



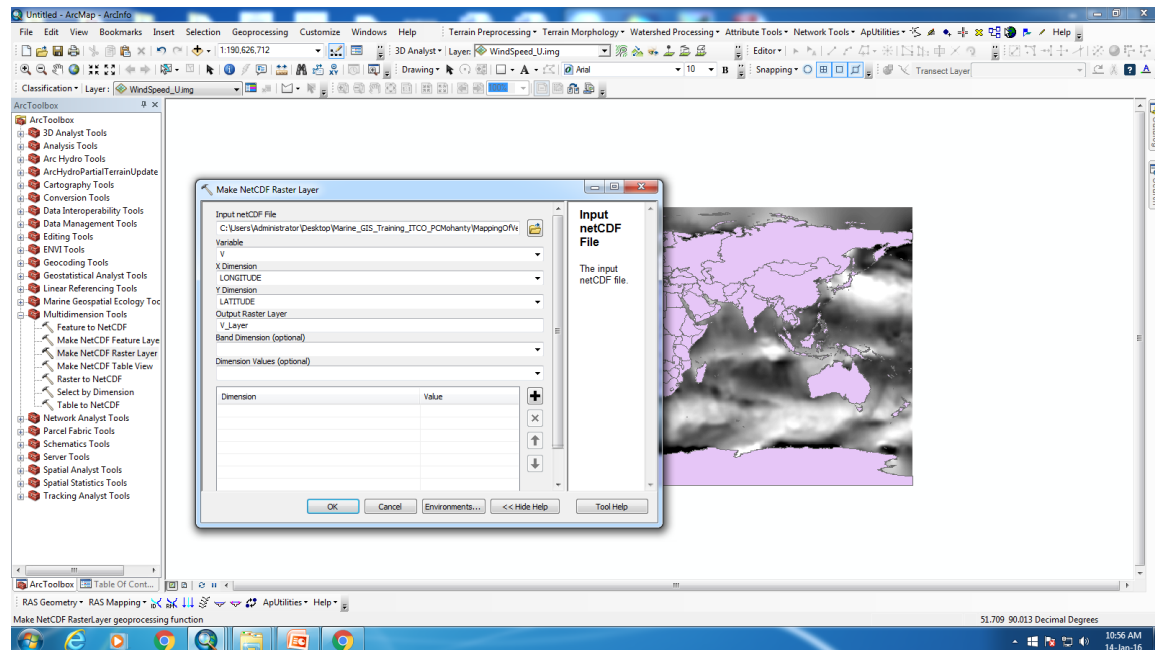
Overview

- I. Installation of MGET tool in ArcGIS
- II. Download current, wind and wave data in NetCDF format
- III. Calculate wind Speed from U and V components
- IV. Convert magnitude and direction in Raster to vector format using U and V components
- V. Generation of wind, wave and currents Map

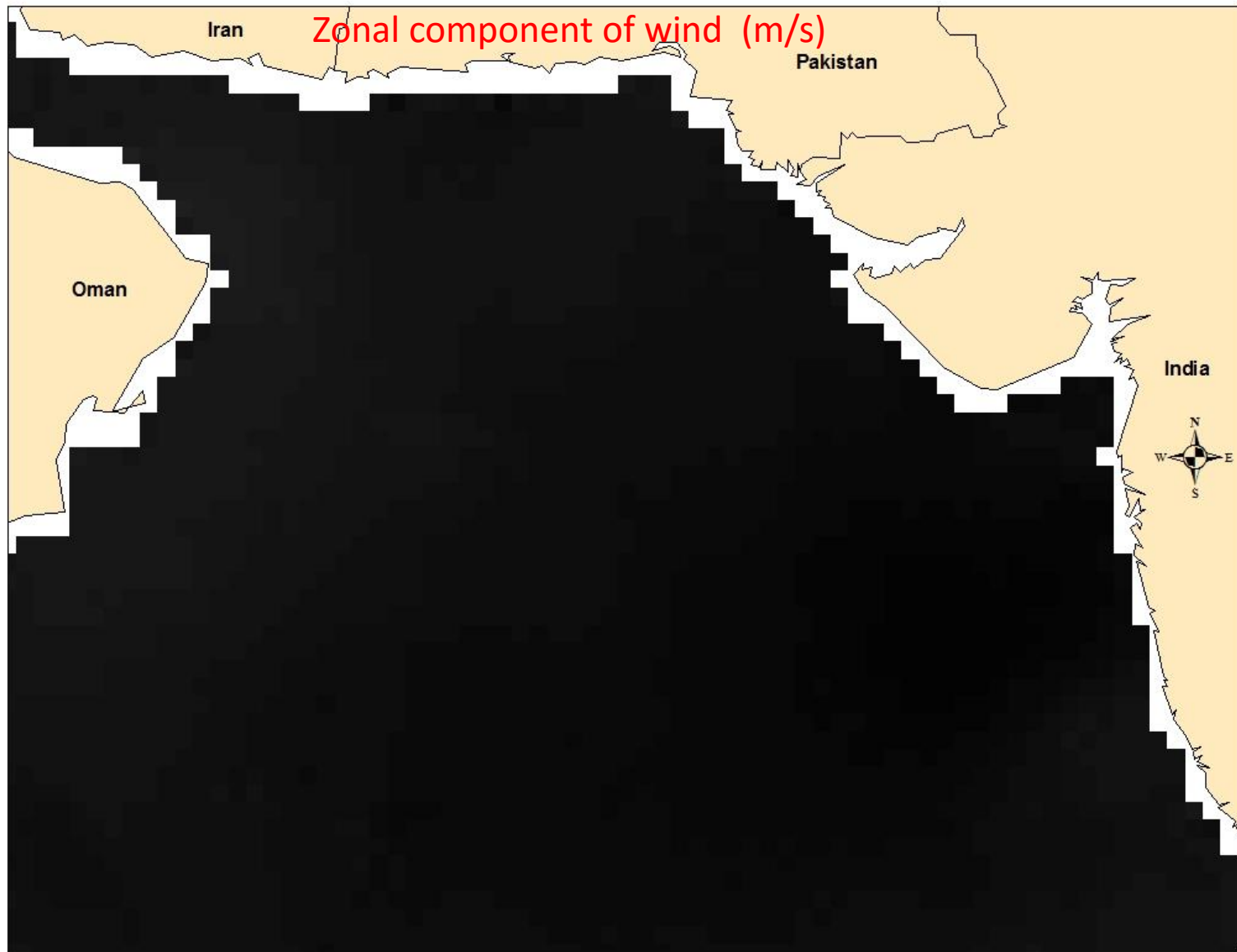


Download ASCAT zonal and meridional Wind speed data from <http://las.incois.gov.in/las>

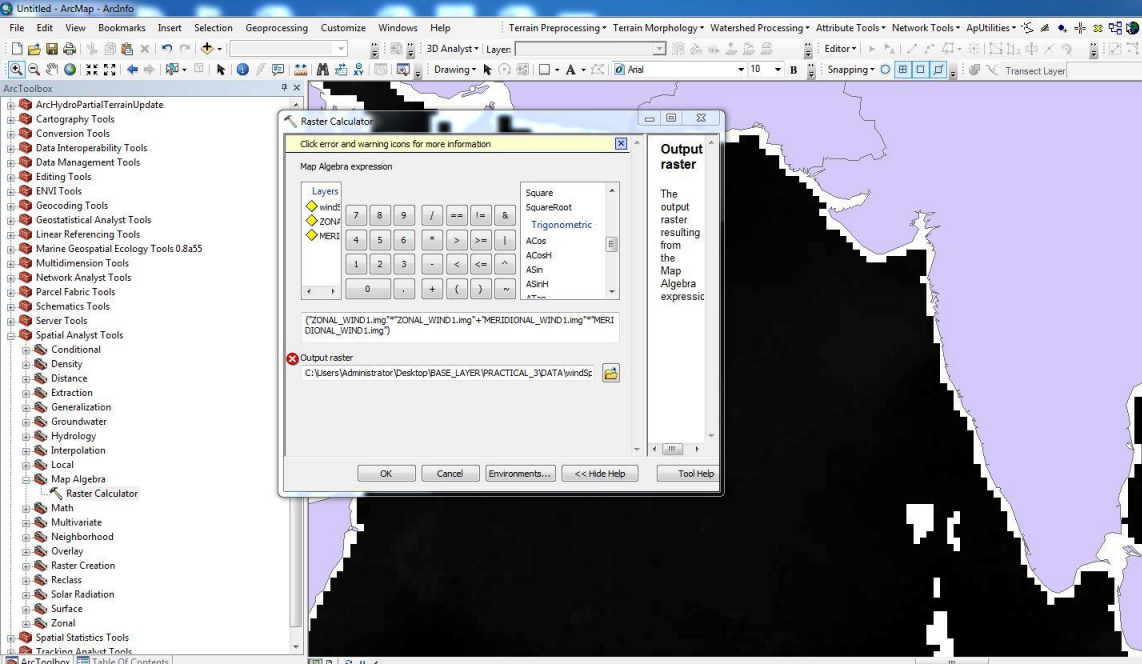
Convert NetCDF to Raster .Img format



Open U and V components of wind data



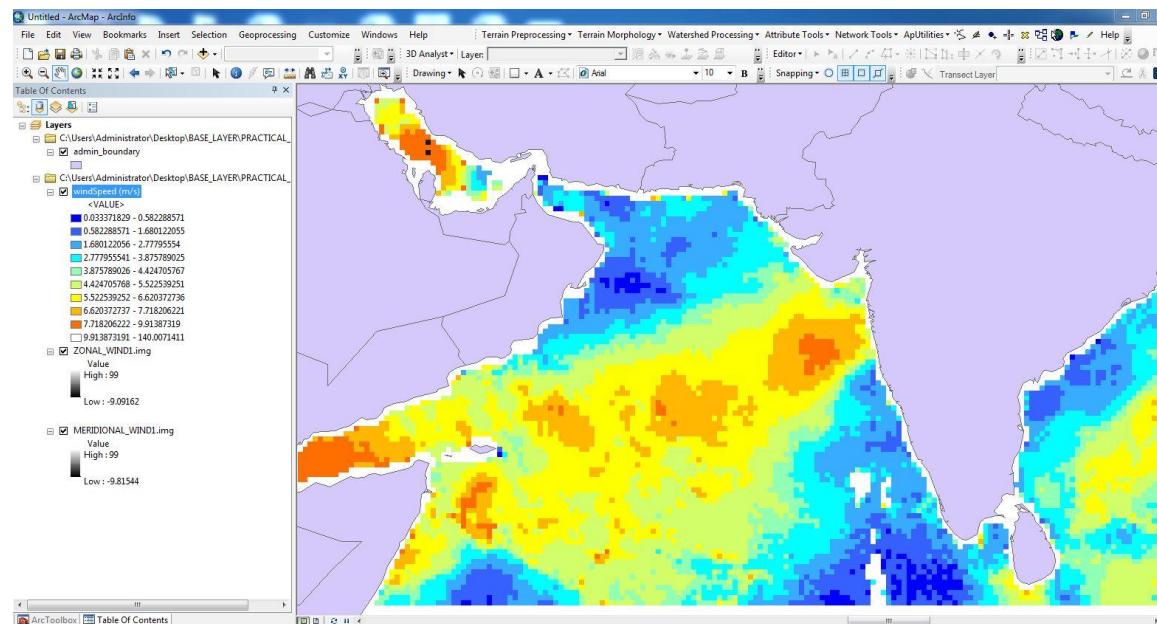
- Install MGET tool and plug-in to ArcGIS
- Drag and drop U and V components of wind data (NetCDF format) into ArcGIS



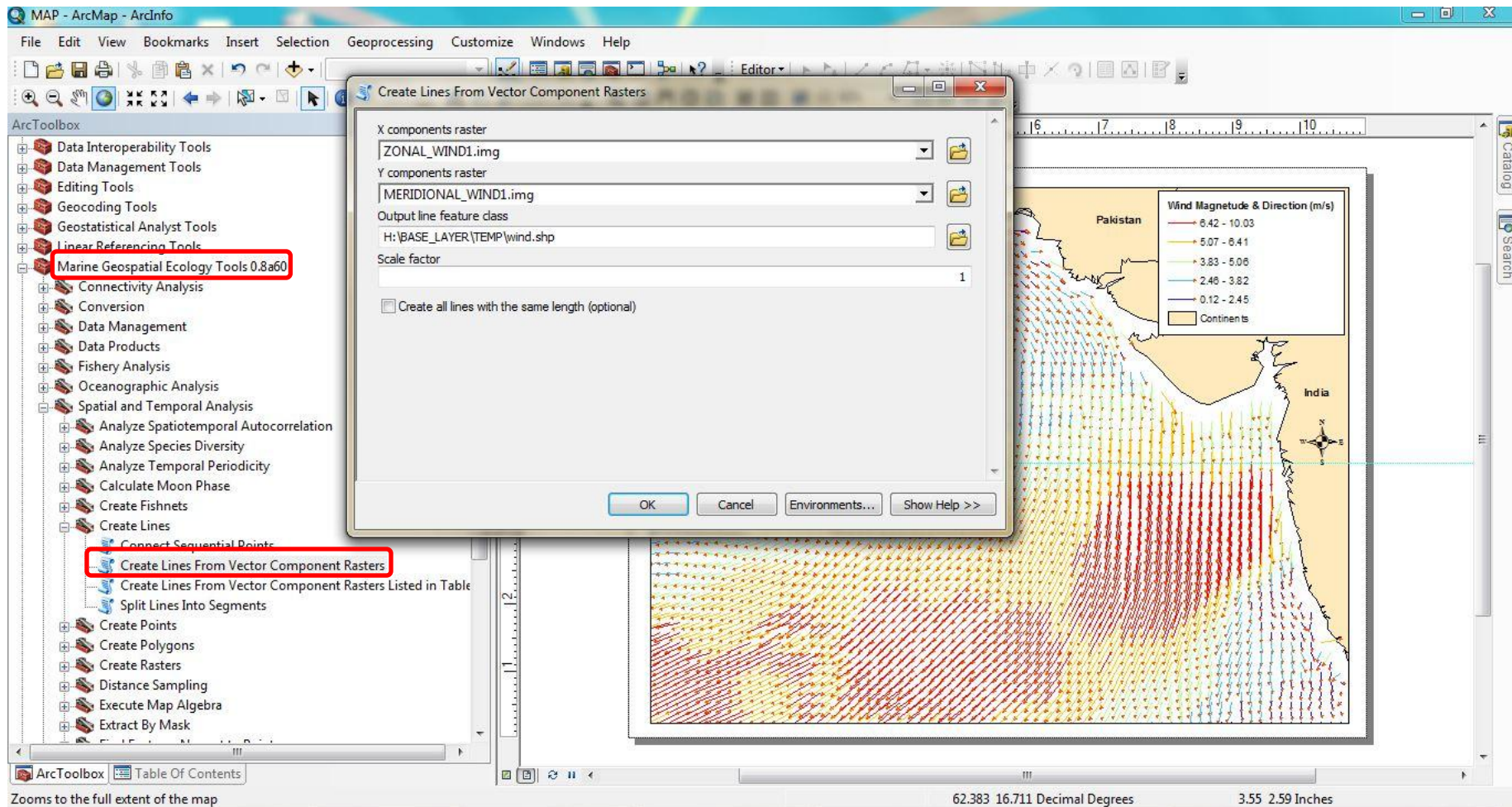
Calculation of wind Speed:
Go to Spatial analysis tool→ Map Algebra
Calculate wind speed using formula

$$Wind\ Speed = \sqrt{U^2 + V^2}$$

Wind Speed plot

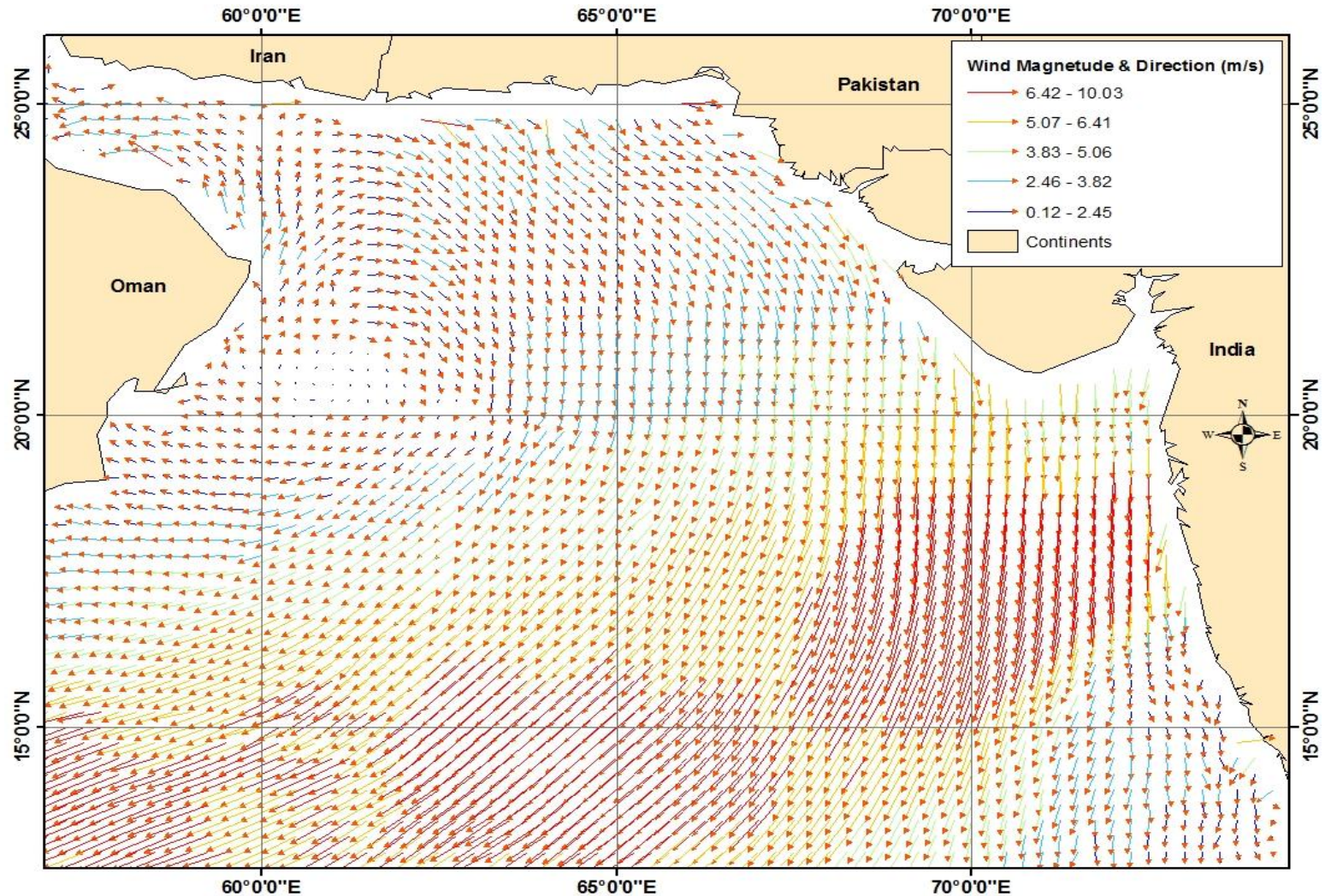


Convert magnitude and direction from Raster to vector



- Go to Marine Geospatial Ecology tool → Spatial and Temporal Analysis → Create line → Create line from vector component raster
- Go to properties of the wind vector layer → click on symbol → select arrow at end as symbol style


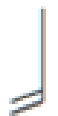











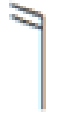










Plot Magetude and Direction of Wind data



Generation of Base Map:

- ✓ Click on Layout View → Right click on layout window → go to properties and click on grid.
- ✓ Insert → click on legend, North Arrow and scale bar and other marginal details.
- ✓ File → export map to generate vector map

Interpretation of wind/current Directions

Wind Direction (flowing ...)	Meteorological Convention			Oceanographic Convention	Wind Direction Angle (N is 0°)
from S to N		or			0
from SW to NE		or			45
from W to E		or			90
from NW to SE		or			135
from N to S		or			180
from NE to SW		or			225
from E to W		or			270
from SE to NW		or			315

Thank you