Lecture On

Open Source Data & Geospatial Tools

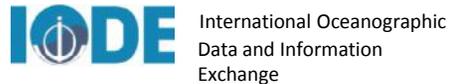## Ocean Teacher Global Academy (OTGA)

Training Course on
Geospatial Techniques for Coastal Mapping and Monitoring (using QGIS)

26 – 30 November, 2018

N. Kiran Kumar

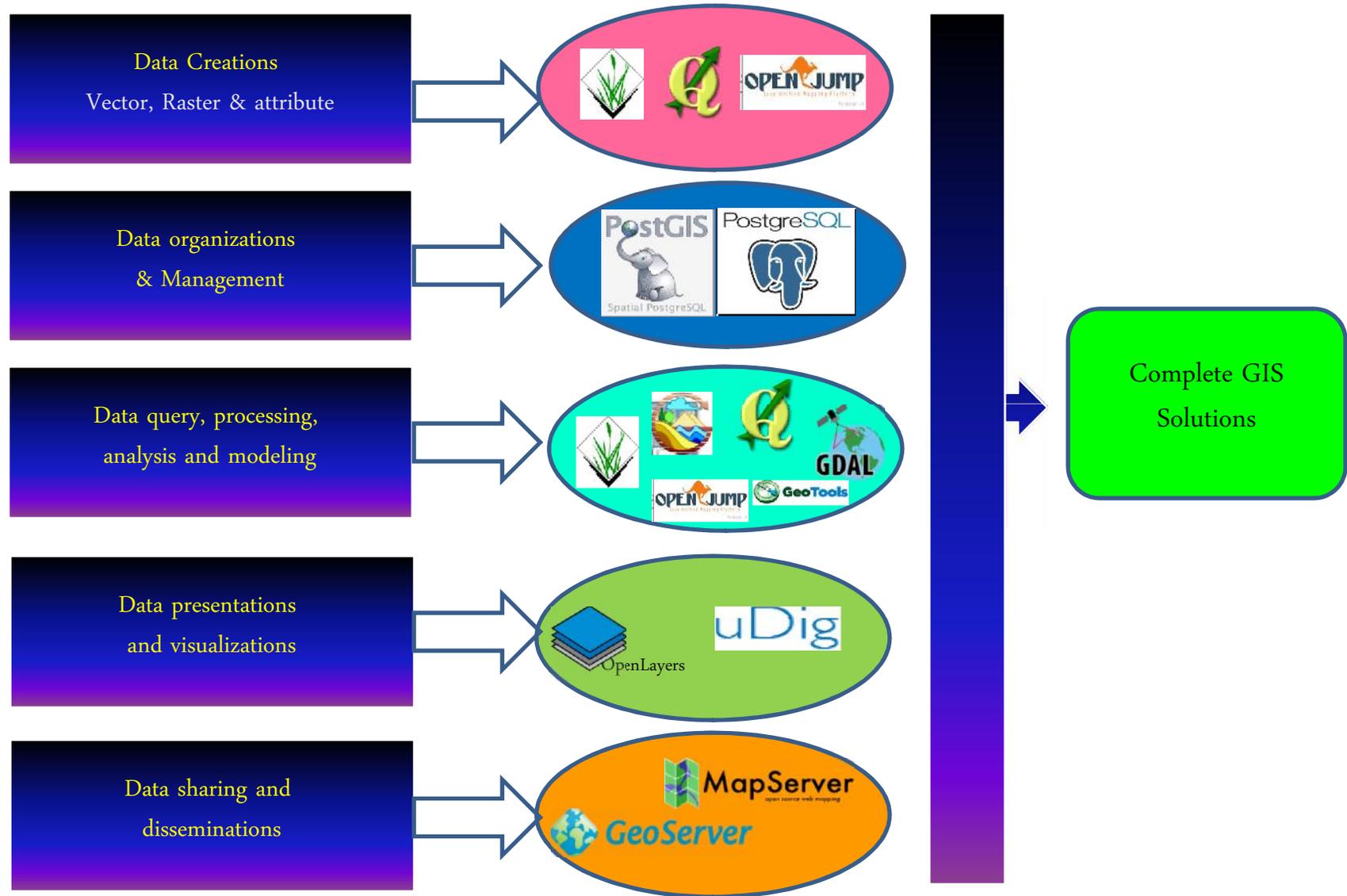Scientist-D & In-charge Web Based Services, INCOIS

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International Training Centre for Operational Oceanography (ITCOocean)

ESSO-INCOIS, Hyderabad, India

United Nations
Educational, Scientific and
Cultural Organization

Intergovernmental
Oceanographic
Commission

IODE

International Oceanographic
Data and Information
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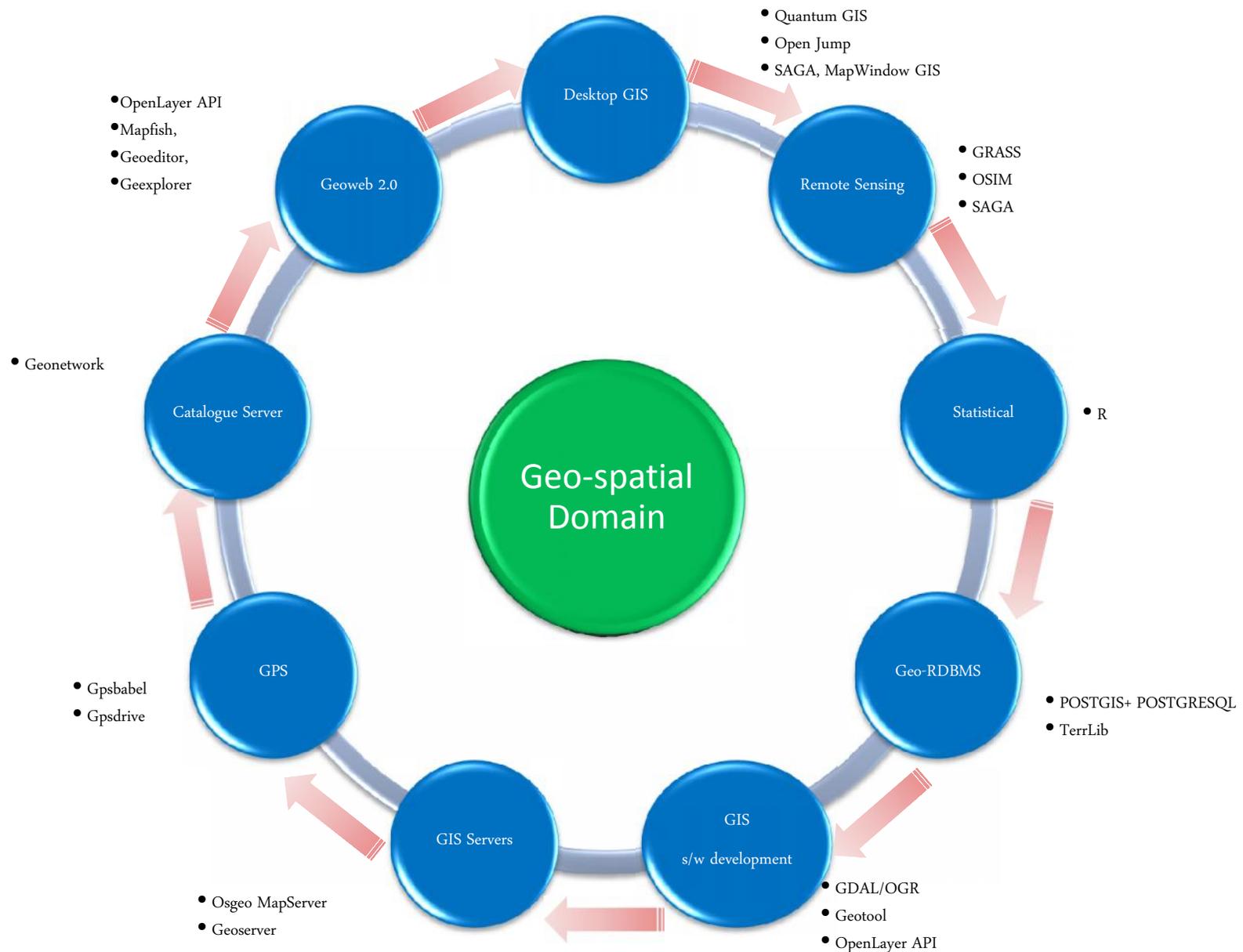**OceanTeacher** GLOBAL ACADEMY

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Overview

❖ Major Components of GIS and Role of open source Softwares

❖ Open Source Tools & Technologies

❖ Useful Resources for Open Source Data

Major Components of GIS and Role of open source s/w

Tools and Technologies

- Quantum GIS
- Open Jump
- SAGA, MapWindow GIS

Desktop GIS

- OpenLayer API
- Mapfish,
- Geoeditor,
- Geexplorer

Geoweb 2.0

Remote Sensing

- GRASS
- OSIM
- SAGA

- Geonetwork

Catalogue Server

Geo-spatial Domain

Statistical

- R

GPS

- Gpsbabel
- Gpsdrive

Geo-RDBMS

- POSTGIS+ POSTGRESQL
- TerrLib

GIS Servers

GIS s/w development

- GDAL/OGR
- Geotool
- OpenLayer API

- Osgeo MapServer
- Geoserver

Open source software

➢ GRASS –U.S. Army Corps of Engineers, open source: a complete GIS

➢ MapServer – Web-based mapping server, by the University of Minnesota.

➢ QGIS - is a cross-platform free and open-source desktop geographic information system (GIS) application that supports viewing, editing, and analysis of geospatial data.

➢ Chameleon – Environments for building applications with MapServer.

➢ GeoNetwork open source – A catalog application to manage spatially referenced resources

➢ ILWIS (Integrated Land and Water Information System) integrates image, vector and thematic data.

➢ MapWindow GIS – Free, open source GIS desktop application and programming component.

Other GIS software

➢ PostGIS – Spatial extensions for the open source PostgreSQL database, allowing geospatial queries.

➢ TerraView – GIS desktop that handles vector and raster data stored in a relational or geo-relational database.

➢ AccuGlobe – Fully functional GIS and geoanalysis software platform for Windows developed by DDTI (ddti.net)

➢ CrossView for ArcGIS – created by A-Prime Software, is a wizard based ArcGIS plug-in, which enables map cross-sectioning and profile creation.

➢ GeoBase –developed by Telogis. focus on real-time processing for reverse-geocoding, geofencing, • My World GIS –GIS platform for Windows and Mac OSX with robust/intuitive geoprocessing tools, Panorama – Russian GIS for military uses.

➢ SPRING – GIS software developed at INPE

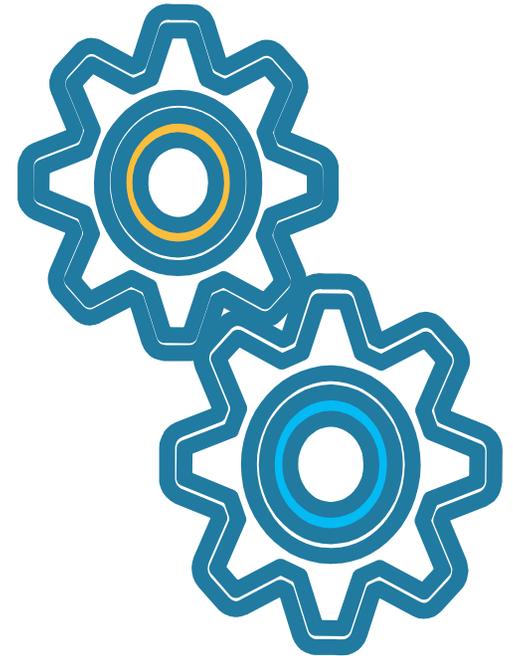➢ SavGIS – Free and complete GIS software available in French, English

GIS Software

GIS software	Windows	Mac OS X	GNU/Linux	BSD	Unix	Web
GRASS	Yes	Yes	Yes	Yes	Yes	No
MapServer	Yes	Yes	Yes	Yes	Yes	AMP
Chameleon	Yes	Yes	Yes	Yes	Yes	AMP
GeoServer	Yes	Yes	Yes	Yes	Yes	Java
GeoTools	Java	Java	Java	Java	Java	No
gvSIG	Java	Java	Java	Java	Java	No
JUMP GIS	Java	Java	Java	Java	Java	No
ILOG JViews Maps [1] 🔗	Java	Java	Java	Java	Java	Java & DHTML/Ajax
Maptitude	Yes	No	No	No	No	Yes
TransCAD	Yes	No	No	No	No	Yes
TransModeler	Yes	No	No	No	No	No
MapWindow GIS	Yes (ActiveX)	No	No	No	No	No
PostGIS	Yes	Yes	Yes	Yes	Yes	Yes
Quantum GIS	Yes	Yes	Yes	Yes	Yes	Yes
uDIG	Yes	Yes	Yes	No	No	No
CARIS	Yes	No	Yes	Yes	Yes	Yes
ESRI	Yes	No	No	No	Yes	Yes
IDRISI	Yes	No	No	No	No	No
Intergraph [2] 🔗	Yes	No	No	No	CLIX	Yes
Manifold System	Yes	No	No	No	No	Yes
MapInfo	Yes	No	Yes	No	Yes	Yes
Oracle Spatial	Yes	Yes	Yes	No	Yes	Yes
Smallworld	Yes	?	Yes	?	Yes	Yes
LandSerf	Java	Java	Java	Java	Java	No
Panorama	"GIS Map 2005"	No	"GIS Panorama"	No	No	No
SPRING	Yes	No	Yes	No	Solaris	No
TatukGIS	Yes	No	{no}}	No	No	?
TerraView	Yes	No	Yes	No	No	No
TNTmips	Yes	Yes	Yes	No	Yes	No

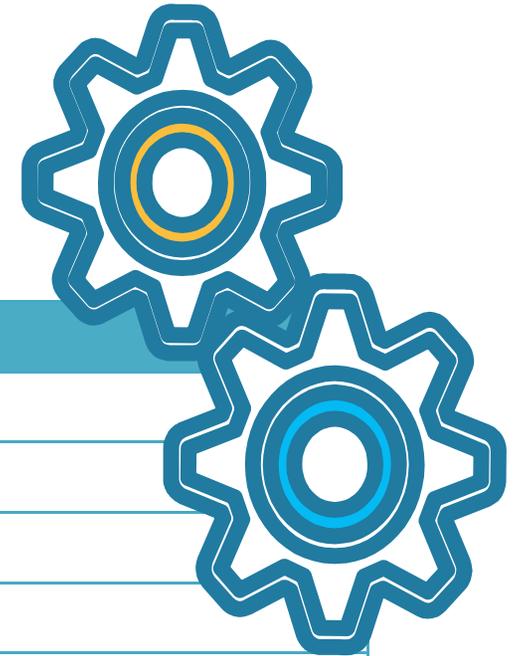# Useful Resources

It is possible to use Freely available GIS Tools to complete

small or big projects

- It's an active community – Join in

  http://www.qgis.org

  https://github.community/

- User Manual - http://qgis.org/en/documentation/manuals.html

- Wiki - https://commons.wikimedia.org/wiki/Category:QGIS

- Discover QGIS –

  https://qgis.org/en/site/about/index.html

- QGIS Python Plugins Repository

  https://plugins.qgis.org/plugins/

Useful Resources

GIS Data for Global Datasets:

Name	Description
Natural Earth	http://www.naturalearthdata.com/
Global Map	http://www.gsi.go.jp/kankyochiri/globalmap_e.html
GSHHG	http://www.soest.hawaii.edu/pwessel/gshhg/
Global Administrative Areas	http://gadm.org/
Gridded Population of the World (GPW)	http://sedac.ciesin.columbia.edu/data/collection/gpw-v4
Global Roads Open Access Data Set (gROADS)	http://sedac.ciesin.columbia.edu/data/set/groads-global-roads-open-access-v1
OpenStreetMap	https://www.openstreetmap.org/
Shaded relief data	http://www.shadedrelief.com/
Bhuvan	http://bhuvan.nrsc.gov.in/gis/thematic/index.php
Earth Explorer	https://earthexplorer.usgs.gov/
ArcGIS Open Data	http://opendata.arcgis.com

Useful Resources
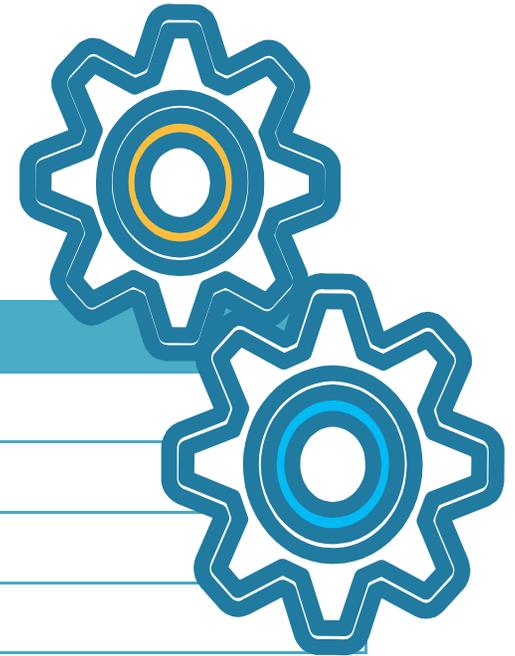
GIS Data for Global Datasets:

Name	Description
Bathymetry	https://www.gebco.net/
Topography	https://lta.cr.usgs.gov/SRTM
Maritime Boundaries	http://www.marineregions.org/downloads.php
Ocean Colour	https://oceancolor.gsfc.nasa.gov/

Thank you

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