Funded by the European Union





Marie Jossé Jérôme Detoc





Fair-Ease an EOSC project An Earth System Sandbox An efficient cooperation An earth-system.usegalaxy.eu An Earth Analytical Lab





Funded by the European Union FAIR-EASE



Fair-Ease Overview



FAIR-EASE Data Discovery and **Access Interdisciplinary Service**





Building an interdomain digital architecture for integrated use of environmental data





FAIR-EASE Earth Analytic Lab



5 pilots to build this interdomain digital architecture for integrated use of environmental data Galaxy as an important technical brick of the architecture

EARTH AND **ENVIRONMENTAL** DYNAMICS

ENVIRONMENTAL BIO-GEOCHEMICAL ASSETS

Coastal Water Dynamics

Earth Critical Zone

Volcano













FE & ESG

2-days Galaxy training

Teach to Fair-Ease partners how and why use Galaxy with the help and experience of ESG collegues A hands on day to integrate tools with the attendants



45 . 1.4



The collaboration of 2 EOSC projects to efficiently get cross-discipline workflows by creating sharing and reusing tools and workflows on Galaxy



meosc **EuroScienceGateway**

Coastal Water Dynamics

Northern Adriatic / Po Estuary

Highly dynamic system, affected by variety of processes: river runoff, meteorology, ocean currents, marine bio-geochemical processes.

- Scientific and socio-economic impacts: a.Biological productivity and fish stocks
 - b.Uptake of atmospheric CO2 and effect on marine carbon cycle
 - c.Input and off-shore transport of suspended material and hazardous substances



• Well monitored

Improvement

- Correlate satellite chlorophyll data with Po river discharge
- Improve gridded climatologies by incorporating ocean circulation
- Facilitate model/data comparison and skill assessment



Combine 3 tools in anaytics workflows to have a complete overview







SOURCE

Calibrates and validates various ocean models within a selected spatial domain using in-situ observations.



ODV

Human-in-the-loop analysis and visualization of input and output coming from the two other tools





DIVAnd

Built new products as an ndimensional variational analysis/gridding from arbitrarily located observations coming from the two other tools

New tool on Galaxy Europe DIVAnd

Key Features

- Scattered data
- Noise allowed
- Physical and inequality constraints can be added
- Topological constraints are handled naturally (barriers, holes)
- Analysis error maps can be estimated
- Periodicity in selected directions can be enforced



observations.









180,0

210.0

240,0

270,0

300.0

emodnet.ec.europa.eu





Key Features

- Calibrates and validates ocean models within a selected spatial domain using in-situ observations
- Performs a secondary quality check
- Measure the ability of numerical models to reproduce observed Essential Ocean Variables (EOV)

Buoy Time Series

Instrument	All instruments ~
Variable	Temperature ~
1st datasource	in situ daily mean centere \sim
2nd datasource	MedRea16 reanalysis dai ~
3rd datasource	None ~

Compute datasources difference Note 1: all data must have the same sampling to

compute differences.

Note 2: differences will	not work for	current trans	spon.		
Organisation	All organizations				
Start: Year 2007 🗸	Month	None			
End: Year None V	Month	None			







Funded by the European Union FAIR-EASE

0MAZA 1.0m, Temperature [degrees_C]

RMS=0.76, bias=-0.31

OMAZA

land/onshore structure

Institution: IEO/ Spanish Oceanographic Institute (Spain)

SOURCE platform_code: 353-SI29200001010_0MAZA_H11 WMO: unknown

Longitude: -2° 45' 47" E Latitude: 37° 34' 37" N

Recorded fields: Temperature: 1.0m

Information on field

Temperature :

 Begin:
 1999-04-10 00:00:00

 End:
 2017-12-31 00:00:00

 Sampling time:
 001 00:00:00 ddd hh:mm:ss

Quality controls:

PARTIAL

Notes:

duplicated and reversed records

New tool on Galaxy Europe Ocean Data View

Key Features

- Supports profile, time-series, trajectory and underway data (native ODV collection format and netCDF)
- Subsetting and filtering features; data export in various formats
- Calculated parameters (physical, chemical, carbon cylce, ...)
- Rich interactive feature set and variety of graphic types



Funded by the European Union FAIR-EASE





Earth Critical Zone

Proportion of land that is degraded over total land area

Methodology proposed by UNCCD (United Nations Convention to Combat) provides three sub-indicators Land Cover/Land Use Change

Soil Organic Carbon Status and Trends

Land Productivity Status and Trends

Funded by the European Union FAIR-EASE

45 . 1.4



The integration of these sub-indicators is done following the one-out all-out rule, this means that if an area was identified as potentially degraded by any of the subindicators, then that area will be considered potentially degraded for reporting purposes.

Earth Critical Zone

PURA Make outputs more representative of ground truth by:

Implementing other indicators coming from remote sensing (leaf area index, soil moisture, water use efficiency, ...)

Establishing new thresholds for determining degraded, stable or improving areas

Enable sub-national scale calculations



45 . 1.4



Aims :

SE

- A new land degradation tool
- Enhanced access to data
- Efficient update of algorithms embedded in the geospatial modeling pipeline (change data and/or modify model code)

New tool on Galaxy Europe QGIS

Geographic Information System software package.

Key Features

- provides a continuously growing number of capabilities provided by core functions and plugins.
- visualize, manage, edit, analyse data design maps.
- support for numerous file formats and databases as well as web services.







Image:			History	÷ .	-
Search datasets Search datasets OGIS for Peace It is some example data in FASTQ and FASTA format. A message of peace from the QGIS Community: We, the developers, contributors and community members of the QGIS Project view the ongoing world where server proson has a voice, the ability to express, and the world with respective person. Bat a voice, the ability to express, and the sector in, their tenure in their homes, villages, towns, cities and countries. We hope that an orderly society and, in particular, to establish and preserve sovergrang dignity, security and freedom from oppression and compromise, humility and deference to the citizen be execure in their tomorpromise, humility and deference to the citizen be the datasets we ask the leaders of the world to resolve their disputes peacefully, through in this conflict cornes to a speedy end. with the datasets gials with datasets you and your families are safe and that this conflict cornes to a speedy end. New Empty Project EPSG-43226 - WGS 84 PSG-43226 - WGS 84 We ask the datest 312 Magnite 100% Magnite 100% Patent 101	- 🗣 🔍 🚊 🌞 Σ	- 📼 🛞 -	HISTORY +	+= '	
OGIS for Peace It is is some example data in FASTQ and FASTA format. A message of peace from the QGIS Community: We, the developers, contributors and community members of the QGIS Project view the ongoing sadness. Our aim in developing QGIS has always been to provide a power that the control of a using potter exaction of a just and humans exoluty. We want to enable the interaction of a just and humans exoluty. We want to enable the interaction of a just and humans exoluty. We want to enable the interaction of a just and humans exoluty we want to be exolution. We past the leaders of the world to resolve their digottes peacefully, through in this conflict corners to a speedry end. Beach 19 year care. To the members of the QGIS Community that are caupting up in this conflict corners to a speedry end. We ask the leaders of the world to resolve their digottes peacefully, through in this conflict corners to a speedry end. Get 30 addition of a support are with dualatest in this conflict corners to a speedry end. Ferson 31 years are safe and that this conflict corners to a speedry end. Ferson 31 years are safe and that this conflict corners to a speedry end. inct Templates Ferson 32 executed and precision are and to support are with dualatests Ferson 32 executed and precision are and to support are with dualatest for OV outputs for the dualatest for the dualatest for OV outputs for the dualatest for the dualatest for	. ब, ब, ब, 🙊 🌏		search datasets	\$ >	×
QGIS for Peace It is some example data in FASTQ and FASTA format. A message of pace from the QGIS Community. We, the developers. contributors and community members of the QGIS Project view the ongoing a world where every person has a voice, the ability to express, and be secure to be support to the format. We have the endowing the average diverse overeign dignity. security and freedom from oppression. B a.o.a MB< Q.24	5		Example data	1	•
A message of pace from the Quis Community: We, the developers, world events in Ukraine and other conflict areas around the world with great tools the creation of a just and humans excitely. We want to enable tool to support in their homes, citilage, towarts consult world where every person has a voice, the ability to express, and be secure tools like QGIS are used to the benefit of all citizens on earth, to support a a world where every norderly society and, in particular, to establish and preserve sovereign dignty, security and freedom from oppression. We ask the leaders of the world with y and freedom from oppression. We ask the leaders of the world with y and defense to the benefit of all citizens on earth, to support a and preserve sovereign dignty, security and freedom from oppression. We ask the leaders of the world with y and defense to a speedy end you and your families are safe and that this conflict comes to a speedy end for the section of the section of the section of the section of the section you and your families are safe and that this conflict comes to a speedy end for the section of the section of the section of the section for the section of the section of the section of the section you and your families are safe and that this conflict comes to a speedy end for the section of the section of the section of the section for the section of the section of the section of the section is with datasets for the section of the section of the section of the section for the section of the section of the section of the section for the section of the section of the section of the section for the section of the section of the section of the section for the section of the section of the section of the section for the section of the section of the section of the section for the section of the section of the section of the section for the section of the section of the section of the section of the section for the section of the section of the section of the section of the section for the section of the section of		QGIS for Peace	This is some example data in FAS FASTA format.	TQ and	d
sidness. Our aim in developing OSIS has always been to provide a portidit boil to support the creation of a just and humane society. We want to avail a world where every person has a voice, the ability to express, and be secure in, their tenure in their homes, villages, towns, cities and countries. We have tools like OGIS are used to the benefit of all citizens on earth, to support a sustainable every sovereign dignity, security and freedom from oppression. We ask the leaders of the world to resolve their disputs peacefully, through negotiation and compromise, humility and deference to the citizens who are placed in your care. To the members of the OGIS Community that are capating you and your families are safe and that this conflict comes to a speedy end. 74 : Interactive JupyTool and no @ / I tebook 73 : Executed JupyTool Noteboo @ / I k tebook 74 : OUV on Untut collection 74 : Interactive JupyTool and no @ / I a list with 0 datasets 66 : Pasted Entry 74 : OUV outputs 75 : Pasted Entry 76 : Pasted Entry 77 : OUV outputs 77 : OUV outputs 78 : Developing OUI 79 : Developing OUI 79 : Developing OUI 70 : DUV outputs 70 : DUV outputs 70 : The datasets 71 : DUV outputs 72 : JupyTool output collection 73 : Dupy Tool output collection 74 : Interactive JupyTool Noteboo 75 : Pasted Entry 76 : Pasted Entry 77 : OUV outputs 77 : OUV outputs 78 : DUV outputs 79 : DUV outputs 70 : The datasets 70 : DUV ou		A message of peace from the QGIS Community: We, the developers, contributors and community members of the QGIS Project view the ongoing world events in Ukraine and other conflict areas around the world with great	8.88 MB ♀ 24	R 3	ø
a world where every person has a voice, the ability to express, and countries. We hove the in, their tenues, villages, twoss, cities and countries. We hove this value of the benefit of all citizens on earth, to support a sustainable environment, an orderly society and, in particular, to establish and preserve sovereign dignity, security and freedom from oppression. We ask the leaders of the world to resolve their disputes peacefully, through regolation and compromise, humility and defence to the citizens who are provided in the volument of the world to resolve their disputes peacefully, through up this volument of the world to resolve their disputes peacefully, through up this volument of the world to resolve their disputes peacefully, through up this volument of the world to resolve their disputes peacefully. 67: QGIS outputs 81 with datasets 81 with datasets 74 : Interactive JupyTool and no 8 Rect Templates New Empty Project FSG:4326 - WGS 84 72 : JupyTool output collection 8 73 : Decuted JupyTool and no 8 74 : Interactive JupyTool and no 8 8 74 : Interactive JupyTool Noteboo 8 8 74 : Interactive JupyTool Noteboo 8 75 : ODV outputs 74 : Interactive JupyTool Noteboo 74		sadness. Our aim in developing QGIS has always been to provide a powerful tool to support the creation of a just and humane society. We want to enable	☑ ⊕		٥
and preserve soveright oightly, security and meedom nom operations. We ask the leaders of the world to resolve their disputes peacefully, through negotiation and compromise, humility and deference to the citizens who are placed in your care. To the members of the QoIS Community that are caught you and your families are safe and that this conflict comes to a speedy end. we cat Templates 74 : Interactive JupyTool and no New Empty Project 73 : Executed JupyTool Noteboo EPSG:4326 - WGS 84 72 : JupyTool output collection 65 : Pasted Entry 1 65 : Pasted Entry 1 74 : interactive JupyTool Noteboo 1 72 : JupyTool output collection 1 65 : Pasted Entry 1 74 : ODV outputs 1 75 : ODV outputs 1 76 : ODV outputs 1 77 : DUV outputs 1 77 : DUV outputs 1 77 : ODV outputs 1 77 : ODV outputs 1 77 : DUV outputs		a world where every person has a voice, the ability to express, and be secure in, their tenure in their homes, villages, towns, cities and countries. We hope tools like QGIS are used to the benefit of all citizens on earth, to support a sustainable environment, an orderly society and, in particular, to establish	ुं, 88 : QGIS on data 30: versio n.txt	0/	
A list with datasets a list with datasets 74 : Interactive JupyTool and no 75 : Executed JupyTool Noteboo 76 : Pasted Entry 77 : Executed JupyTool output collection 78 : Executed JupyTool output collection 79 : Executed JupyTool output collection 70 : Executed JupyTool output collection 70 : Executed JupyTool output collection 71 : Executed JupyTool output collection 72 : JupyTool output collection 86 : Pasted Entry 72 : JupyTool output collection 86 : Pasted Entry 73 : Executed JupyTool output collection 74 : Interactive JupyTool Noteboo 74 : Interactive JupyTool Noteboo 75 : Executed JupyTool output collection 76 : Pasted Entry 77 : Interactive JupyTool output collection 76 : Pasted Entry 77 : Interactive JupyTool output collection 77 : Executed JupyTool output collection 76 : Pasted Entry 77 : Interactive JupyTool output collection 78 : Executed JupyTool output collection 79 : Interactive JupyTool output collection 70 : Interactive JupyTool output collection 71 : Executed JupyTool output collection 72 : JupyTool output collection 73 : Executed JupyTool output collection 74 : Interactive JupyTool output collection 74 : Interactive JupyTool output collection 75 : ODV outputs 76 : Interactive JupyTool output collection 77 : Interactive JupyTool output collection 76 : Interactive JupyTool output collection 76 : Interactive JupyTool output collection 77 : Interactive JupyTool output collection 78 : Interactive JupyTool output collection 79 : Interactive JupyTool output collection 70 :		We ask the leaders of the world to resolve their disputes peacefully, through	🔅 87 : QGIS outputs	0 /	
up in this connect. our thoughts and support are with you, and we hope that you and your families are safe and that this conflict comes to a speedy end. 74 : Interactive JupyTool and no ● rct Templates 73 : Executed JupyTool Noteboo ● 1 Rew Empty Project a list with 9 datasets 66 : Pasted Entry ● EPSG:4326 - WGS 84 65 : Pasted Entry ● 1 65 : Pasted Entry ● 1 1 77 : ODV outputs 1 1 a list with 9 datasets 3 1 35 : ODV outputs 1 1 a list with 9 datasets 1 1 a list with 1 tot dataset 1 1 31 : Panoply outputs 1 1 a list with 1 tot dataset 1 1 a list with 1 tot dataset 1 1 a list with 1 tot dataset 1 1		negotiation and compromise, humility and deference to the citizens who are placed in your care. To the members of the QGIS Community that are caught is the complete the term of the term.	a list with datasets		
Scale 11 Magnifier 100% Ratation 0.0 * 2 Render @ EPSG:4326 1 Y2: JupyTool output collection 0 1 1 1 0 1 1 Scale 11 Magnifier 100% Ratation 0.0 * 2 Render @ EPSG:4326 1 <td< td=""><th></th><td>you and your families are safe and that this conflict comes to a speedy end.</td><td>74 : Interactive JupyTool and no tebook</td><td>0 /</td><td>۲</td></td<>		you and your families are safe and that this conflict comes to a speedy end.	74 : Interactive JupyTool and no tebook	0 /	۲
New Empty Project EPSG:4326 - WGS 84 66 : Pasted Entry 67 : Pasted Entry 67 : Pasted Entry 67 : Pasted Entry 68 : ODV on data 30: version.bt 48 : ODV on data 30: version.bt 47 : ODV outputs 47 : ODV outputs 35 : ODV outputs 31 : with 0 datasets 33 : Panoply outputs 33 : Panoply outputs a list with 1 bt dataset			73 : Executed JupyTool Noteboo k	0 /	۲
New Empty Project EPSG:4326 - WGS 84 66 : Pasted Entry 65 : Pasted Entry 65 : Pasted Entry 48 : ODV on data 30: version.txt 48 : ODV outputs 17 : ODV outputs 1 ist with 0 datasets 35 : ODV outputs 1 ist with datasets 33 : Panoply outputs 1 ist with 1 txt dataset	ect lemplates		72 : JupyTool output collection	0 /	Ĩ
EPSG:4326 - WGS 84 66 : Pasted Entry 65 : Pasted Entry 48 : ODV on data 30: version.txt 47 : ODV outputs a list with 0 datasets 35 : ODV outputs 0 / 1 a list with datasets 33 : Panoply outputs a list with 1 txt dataset 33 : Panoply outputs a list with 1 txt dataset		New Empty Project	a list with Ø datasets		
65 : Pasted Entry 48 : ODV on data 30: version.bt 47 : ODV outputs a list with 0 datasets 35 : ODV outputs a list with datasets 35 : ODV outputs a list with datasets 33 : Panoply outputs a list with 1 bt dataset 33 : Panoply outputs a list with 1 bt dataset		EPSG:4326 - WGS 84	66 : Pasted Entry	• /	Ŧ
48 : ODV on data 30: version.txt 48 : ODV outputs 47 : ODV outputs a list with 0 datasets 35 : ODV outputs a list with datasets 33 : Panoply outputs a list with 1 txt dataset 33 : Panoply outputs b 2 I b 2			65 : Pasted Entry	• /	ii
47 : ODV outputs a list with 0 datasets 35 : ODV outputs a list with datasets 33 : Panoply outputs a list with 1 bt dataset 33 : Panoply outputs 0 ✓ 1 a list with 1 bt dataset 33 : Panoply outputs a list with 1 bt dataset			48 : ODV on data 30: version.txt	• /	1
35 : ODV outputs a list with datasets 33 : Panoply outputs 33 : Panoply outputs a list with 1 txt dataset 33 : Scale 1:1 ▼ ▲ Magnifier 100% ♀ Retation 0.0 ° ♀ ▼ Render ⊕ EPSG:4326 ♥ ■ >			47 : ODV outputs a list with 0 datasets	0 /	
33 : Panoply outputs a list with 1 txt dataset Scale 1:1 ▼ Amagnifier 100% C Rotation 0.0 * C Render ⊕ EP5G:4326 @ Scale 1:1 >			35 : ODV outputs a list with datasets	0 /	
Scale 1:1 ▼ 🔒 Magnifier 100% <			33 : Panoply outputs a list with 1 bxt dataset	0 /	Ĩ
	Scale 1:1	▼ Augnifier 100% Contaction 0.0 * Co			>

Volcano purpose

Provide tools for aggregating and jointly analysing satellite observations from Solid Earth and Atmospheric Science communities for the near-real-time monitoring of volcanic activity.

Explanation

Tools will be of interest for :

- Scientists by facilitating data exploration and analysis.
- Volcano observatories worldwide to help hazard assessment, especially during explosive eruptions that may destroy ground instruments



the European Union FAIR-EASE

Volcano purpose

Aim: coupling gas-particle emissions & ground deformation

Ground deformation

Access to:

• Transport & magma storage

InSAR

ALOS-2

20 km

Volume budget



pixel size = 1–100 m

the European Union FAIR-EASE

Revisit time: ~ 6 days

Radiative forcing





Gas-particle emissions

Access to:

- Magma composition, depth
- mass budget
- flux

TROPOMI/IASI/OMPS – SO2





1000 km

pixel size = 5-25 km

Revisit time: 12 or 24 hours (LEO) - 20 min (GEO)



Key Features

- Manage HDF-4 and HDF-5
- Create new files, add or delete groups and datasets
- View and modify the content of a dataset
- Add, delete and modify attributes

the European Union FAIR-EASE

iait Name: BT_Real ibin Init_Lat Path: / ibin Nb_Line_Lat Path: / ibin Nb_Line_Lat Tag. Ref: 1811441878 ibin Cols_Lon Ibin Dataset ibin Cols_Lon Ibin Ibin Ibin ibin Cols_Lon Ibin Ibin Ibin Ibin ibin Cols_Lon Ibin Ibin Ibin Ibin Ibin Ibin ibin Cols_Lon Ibin	SM_OPER_MIR_C_	F1_A_	2017050	3T004653 <u>.</u>	^	Object At	tribute Info	General Object I	nfo					
Init_Lat Init_Lon Init_Lon Path: Init_Lon Path: IND_Line_Lat Image: Construction of the state of	iat Ion					Name:	F	RT Real						
Init_Lon Image: Parting of the second s	Init_Lat					Deth:		01_1004						
Image: InetCDF3 Dataset Type: InetCDF3 Dataset Tag. Ref: Tag. Ref: Tag. Ref: Tag. Ref: Tag. Ref: Tag. Ref: Tag. Ref: Tag. Ref: Tag. Ref: Tag. Ref: Tag. Ref: Tag. Ref: Tag. Ref: Tag. Ref: Tag. Ref: Tag. Ref: Tag. Ref: Tag. Ref: Tag. Ref:	🏙 Init_Lon					Path:	1							
Image: Non-Cols_Lon Image: Tag. Ref: 1811441878 Image: Tag. Ref: 1811441878 <td>🍓 Nb_Line_Lat</td> <td></td> <td></td> <td></td> <td></td> <td>Type:</td> <td>r</td> <td>netCDF3 Dat</td> <td>aset</td> <td></td> <td></td> <td></td> <td></td> <td></td>	🍓 Nb_Line_Lat					Type:	r	netCDF3 Dat	aset					
X_Swath Dataset Dataspace and Datatype Node_Validity BT_Real at / [SM_OPER_MIR_C_F1_A_20170503T014051_301_001_7.0BL in Y/ □ × BT_Res_1 BT_Real at / [SM_OPER_MIR_C_F1_A_20170503T014051_301_001_7.0BL in Y/ □ × BT_Real BT_COPOI BT_Real 0 1 2 3 4 5 6 BT_Inag 0 1 2 3 4 5 6 7 BT_Real 0 1 2 3 4 5 6 7 BT_Inag 0 1 2 3 4 5 6 7 BT_Inag 0 1 2 3 4 5 6 7 BT_Real 0 1 2 3 4 5 6 7 BT_CoPol 1 2 3 4 5 6 7	Mb_Cols_Lon				B	Tag, R	ef: 1	811441878						
Grid_Point_Mask Dataset Dataspace and Datatype Node_Validity BT_Real at / [5M_0PER_MIR_C_F1_A_20170503T004653_20170503T014051_301_001_7.0BL in Y/ - - × Flags_1 BT_Real at / [5M_0PER_MIR_C_F1_A_20170503T004653_20170503T014051_301_001_7.0BL in Y/ - - × BT_Real BT_COPOI BT_Real 0-based - - × Devel_Radiometric 0 at 3 2 3 4 5 6 32768 32	🏙 X_Swath					-								
■ Node_Validity ■ Flags_1 ■ Flags_2 ■ Flags_2 ■ Flags_2 ■ BT_CoPol ■ BT_Real ■ BT_Real ■ BT_Real ■ BT_Real ■ BT_Real ■ BT_Real ■ BT_Real ■ BT_Real ■ Display ■ Pixel_Radiometric ■ Pixel_Radiometric ■ Pixel_Radiometric ■ Incidence_Angle ■ Faraday_Rotation ■ Geometric_Rotati ■ Footprint_Axis1 ■ Footprint_Axis2 ■ Snapshot_ID ■ Days ■ UTC_Seconds ■ UTC_Microsecon ■ Snapshot_OBET ■ XrZ_Velocity ■ Krzt Position ■ Snapshot_OBET ■ XrZ_Velocity ■ Krzt Position ■ XrZ_Velocity ■ Krzt Position ■ Krzt P	🍓 Grid_Point_Mask					Datas	set Datas	pace and Da	tatvpe					
Flags_1 Flags_1 Flags_1 Flags_2 BT_CoPol Flags_2 BT_Real 0 1 2 3 4 5 6 0 1 2 3 4 5 6 0 1 2 3 4 5 6 0 1 2 3 4 5 6 0 1 2 3 4 5 6 6 0 1 2 3 4 5 6 6 0 1 2 3 4 5 6 6 0 1 2 3 4 5 6 6 0 2 3 4 5 6 6 6 1 32768 -32768 -32768 -32768 -32768 -1672 -177 1 - - - - -1672 -1672 -1672 -1672 -1672 -1672 -1672 -1672 -1672	🕲 Node_Validity	ят р	and an / ICh		E1 4	201705027	004652 2012	705027014051 201	001 7 08	L i= XA				
Flags_2 Import/respont Uata Data Display BT_CoPol BT_Real 0-based 0-based 5.3 = -32768 5.3 = -32768 -32768 Pixel_Radiometric 0 1 2 3 4 5 6 Pixel_Radiometric 0 1 2 3 4 5 6 6 Pixel_Radiometric 0 1 2 3 4 5 6 6 29 -32768 -32768 -32768 -32768 -32768 -32768 -32768 -32768 -32768 Geometric_Rotation 3 -32768 -32768 -32768 -32768 -3276 -4276 -4276 30 -32768 -32768 -32768 -32768 -3276 <	🏽 Flags_1	e⊞ bi_k	ear at / [Siv		UPIDA No. 1	201703031	1004035_2017	000051014051_001	_001_7.06	L IN 1:\		_		
BT_CoPol 0 1 2 3 4 5 6 1 BT_Imag 0-based 5.3 = -32768 3276	Flags_2	lable l	mport/Expor	t Data Data L	lispla	у								
BT_Real 0-based BT_Imag 5.3 = -32768 Pixel_Radiometric 0 1 2 3 4 5 6 1 Pixel_Radiometric 0 1 2 3 4 5 6 1	BT_CoPol													
BT_Imag 5.3 = -32768 Pixel_Radiometric 0 1 2 3 4 5 6 6 Pixel_Radiometric 0 1 2 3 4 5 6 6 Pixel_Radiometric 0 1 2 3 4 5 6 6 Incidence_Angle Azimuth_Angle 29 32768 -32768	🖶 BT_Real	0-bas	ed											
Pixel_Radiometric 0 1 2 3 4 5 6 6 Pixel_Radiometric Incidence_Angle 29 32768 -32768 </td <td>🛗 BT_Imag</td> <td>5</td> <td>3 =</td> <td>-32768</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td>	🛗 BT_Imag	5	3 =	-32768								-		
Pixel_Radiometrid 0 1 2 3 4 5 6 Incidence_Angle Azimuth_Angle 9 -32768<	Pixel_Radiometric			02100								Sho	w Data with O	ptions
 Incidence_Angle Azimuth_Angle Faraday_Rotation Geometric_Rotati Footprint_Avis1 Footprint_Avis2 Xi Eta Snapshot_ID Days UTC_Microseconds UTC_Microseconds Snapshot_OBET XYZ_Position XYZ_Position XYZ_Position XYZ_Velocity Voctor Source 	🛍 Pixel_Radiometric						3			5 6	^			
Azimuth_Angle Darlos	Incidence_Angle	29	-32768	-32768	-3	32768	-32768	-32768	-3276	38 -32768	-3276			
Faraday_Rotation 02100 02100 02100 02100 02100 02100 02100 Geometric_Rotation 31 -32768 -3276	Azimuth_Angle	30	-32768	-32768		22768	-32768	-32768	-3276	🛤 Lineplot - /BT	Real - by column			
Geometric_Rotat 31 32.768 </td <td>Faraday_Rotation</td> <td>21</td> <td>22760</td> <td>-90769</td> <td></td> <td>2760</td> <td>-90769</td> <td>-20760</td> <td>-2076</td> <td>1700</td> <td></td> <td></td> <td></td> <td></td>	Faraday_Rotation	21	22760	-90769		2760	-90769	-20760	-2076	1700				
32 32 <td< td=""><td>Geometric_Rotati</td><td>31</td><td>00760</td><td>-02700</td><td>-D</td><td>0760</td><td>-02700</td><td>-02700</td><td>-0270</td><td>1/03</td><td>П п</td><td></td><td></td><td></td></td<>	Geometric_Rotati	31	00760	-02700	-D	0760	-02700	-02700	-0270	1/03	П п			
Image: Footprint_Axis2 Image: Xi Image: Stappshot_ID	Footprint_Axis1	32	-32768	-32768		32768	-32768	-32768	-3270	-1672 -	ài II.			
 34 -32768 -32768 -32768 -32768 -32768 -32768 -32768 -3276 -35276 Snapshot_ID Days UTC_Seconds UTC_Microsecond Snapshot_OBET Snapshot_OBET XYZ_Position XYZ_Velocity XYZ_Velocity XYZ_Velocity XYZ_Velocity XYZ_Velocity XYZ_Velocity XYZ_Velocity XYZ_Velocity XYZ_VELOCIT <li< td=""><td>Footprint_Axis2</td><td>33</td><td>-32768</td><td>-32768</td><td></td><td>52768</td><td>-32768</td><td>-32768</td><td>-3270</td><td>-5127 -</td><td>l di</td><td></td><td></td><td></td></li<>	Footprint_Axis2	33	-32768	-32768		52768	-32768	-32768	-3270	-5127 -	l di			
 ■ Eta ■ Snapshot_ID ■ Days ■ UTC_Seconds ■ UTC_Microsecond ■ Snapshot_OBET ■ Snapshot_OBET ■ XYZ_Position ■ XYZ_Velocity ■ XYZ_VEL ■ XYZ_Velocity ■ XYZ_VEL ■ XYZ_V	iX 🗑	34	-32768	-32768	-3	32768	-32768	-32768	-3276	-8582 -				
Snapshot_ID Days UTC_Seconds UTC_Microseconi Snapshot_OBET XYZ_Position XYZ_Position XYZ_Velocity	🏙 Eta	35	-32768	-32768	-3	32768	-32768	-32768	-3276	-12037 -				
Image: Constraint of the second s	Snapshot_ID	36	-32768	-32768	-3	32768	-32768	-32768	-3276	-15492 -				
Image: Construction 33 -32768 -32768 -32768 -32768 -32768 -32768 -22402 - Image: Construction 39 -32768 -32768 -32768 -32768 -32768 -32768 -22402 -	Cays 🗎	37	-32768	-32768	-3	32768	-32768	-32768	-3276	-18947 -				
■ UTC_Microsecon ■ Snapshot_OBET ■ XYZ_Position ■ XYZ_Velocity ■ XYZ_VELOCITY	UTC_Seconds	38	-32768	-32768	-3	32768	-32768	-32768	-3276	-22402				
Snapshot_OBE -20007 -29312 -29312 -32768 -2937 -293 -29 -2937	UTC_Microseconi	39	-32768	-32768	-3	32768	-32768	-32768	-3276	-25957				
Image: Second	Snapshot_OBET	<								-20007				
XYZ_Velocity -32768 -32768 -3277 555 922	WXYZ_Position									-29312 -				
Vootor Source	XYZ_Velocity									-32768	077			
	Wector_Source									0	217	666	833	111
	Q_Info													

User property file - C:\Users\jdetoc\AppData\Local\HDFV User property file - C:\Users\jdetoc\.hdfview3.3.1

BT_Real at / [SM_OPER_MIR_C_F1_A_20170503T004653_20170503T014051_301_001_7.DBL in Y\catds\M35220\datarmorkL1C\SM_OPER

New tool on Galaxy Europe HDFview Interactive tool, suitable for browsing and editing Hierarchical Data Format

						-		×	
A_2017	70503T0046	53_20170	503T01405	1_301_00	1_7.DB	L v	Clear	Text	out
								^	ection
								1	
									o
									0 0
s									
									L
						_	· _		×
								_	
								-1	
								_2	
								3	
								4 - 5	
								- 6	
								_7	
111	1389	1667	1945	2223	2501		277þ	8	
	Close								_
								~	
								^	
_MIR_C	C_F1_A_201	70503T00	4653_201	70503T014	051_30)1_00	1_7][di	

Bio-GeoChemical Goal

used by a series of common tools to help with delivering high qualified biogeochemical data that will be made FAIR.

Bio-GeoChemical Workflow

Argo, glider, sea-mammals

Copernicus, Emodnet Chemistry, Glodap, Seabass, Maredat, Carimed

Copernicus (Mairne), ERA (copernicus atmosphere), NCEP (noaa atmosphere)

> GlobColour, OCCI (copernicus marine)

WOA & Glodab (ocean hydrology, chemistry), Gebco(bathymetry)

New tool on Galaxy Europe Scoop Argo

Key features

- Vizualises a series of Argo floats NetCDF cycle files.
- The data are displayed in interactive graphics, with bathymetry, climatology and geographic maps environmental informations.
- Quality Control flags are graphically changed by the User.
- The history section is updated with the list of performed changes.

Marine Omics

Understand how marine ecosystem services are supported by microorganisms

Available Data products: raw and assembled sequences, taxonomic inventories, and community gene function profiles

From samples of microbial marine biodiversity (eDNA) the pilot aims to implement computational workflows using/producing Essential Biodiversity Variables (EBV) and Essential Ocean Variables (EOV).

Workflows examples :

- Bioprospecting workflow (identifying and classifying biosynthetic gene clusters)
- Ecological strategies workflow (characterising ecological communities among marine environments)

EMBRC EUROPEAN

MARINE BIOLOGICAL RESOLIRCE CENERE

Earth Analytical Lab

- An easy way to visualise, analyse and process environmental and biodiversity data on-demand
- Improve data access both in terms of data harmonisation and in terms of technical efficiency of data access.
- Galaxy a main component of the EAL

THANKS FOR YOUR ATTENTION DO YOU HAVE ANY QUESTIONS ?

© hq-renders/alamy

jerome.detoc@ifremer.fr