

# Nonlinear Processes in Geosciences Business Meeting 06.5.2020, Chat room

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Meetings | Publications | Outreach | [www.egu.eu](http://www.egu.eu)

Chair: Stéphane Vannitsem, NP President

- Agenda:
1. Opening
  2. NP Awards
  3. News from the council
    - Statistics
    - Sharing Geoscience Online
    - Governance Review
  4. NP activities at the GA
  5. ECS Report
  6. NPG Report
  7. Calls
  8. Other matters
  9. Closing

## 2. Awards

### Outstanding Student Poster Award 2019:

The 2019 Outstanding Student Poster and PICO (OSPP) Award is awarded to Elisa Ziegler for the poster/PICO entitled:

*Transient simulation of climate variability during the Last Glacial Maximum and the Holocene with an energy balance climate model* (Ziegler, E.; Rehfeld, K.)



Elisa Ziegler is a graduate student at the Institute of Environmental Physics at the University of Heidelberg, Germany. She evaluates climate variability using climate models of low complexity as part of Dr. Kira Rehfeld's research group, State and timescale-dependency of climate variability from the last Glacial to present day

The poster details her work as a master student extending a two-dimensional energy balance climate model to run transient simulations forced by carbon dioxide, insolation, orbital configuration, as well as land, sea, and ice distribution. The influences of different forcings on the modelled temperature fields are compared in idealized experiments, and a simulation over the past 100,000 years is presented.

### Outstanding Student Poster Award 2019:



The 2019 Outstanding Student Poster and PICO (OSPP) Award is awarded to Rem-Sophia Mouradi for the poster/PICO entitled:

*A combined orthogonal decomposition and polynomial chaos methodology for data-based analysis and prediction of coastal dynamics* (Mouradi, R.-S.; Goeury, C.; Thual, O.; Zaoui, F.; Tassi, P.)

Rem-Sophia Mouradi is a PhD researcher in the hydrodynamics department of EDF R&D (Chatou, France) and CERFACS (Toulouse, France). In the application context of sedimentation in nearshore channels, her research focuses on the use of field data to improve predictions provided by a numerical model.

The work presented in EGU2019's poster concerned the first approach. The parameters of the study, were considered random variables. The structure of the interest 2D field (or output) was simplified using Proper Orthogonal Decomposition (POD). The dependency structure between the components of POD and the inputs, which are natural forcings, was built using Polynomial Chaos Expansion (PCE). This introduces a methodology for a purely data based learning algorithm that comes with the advantage of probabilistic characterization, useful for uncertainty quantification studies.



### Outstanding Early Career Scientist 2020:

The 2020 Division Outstanding Early Career Scientist Award is awarded to Ekaterina Didenkulova for her exceptional contribution in developing the theory of nonlinear waves in geophysics, and in particular for the development of extreme waves, known as rogue waves.



Ekaterina Didenkulova is a very talented young scientist who is a leading expert on the theory of nonlinear waves. Didenkulova obtained a master's degree in mathematics and informatics in 2012 and a bachelor's degree in French linguistics in 2013. She graduated in 2015 with a PhD in Mechanics of Fluid, Gas and Plasma from the joint dual-degree program between the Ecole Centrale de Marseille and Nizhny Novgorod State Technical University. Didenkulova's scientific work is primarily focused on the study of nonlinear waves in geophysics with application to extreme waves (so-called "freak/rogue waves"). These waves have always been studied in a random field of wind waves (with a narrow spectrum). She was one to show that rogue waves can occur in soliton fields, so-called soliton turbulence, inherent in shallow-water waves, internal waves in the atmosphere and the ocean, and in astrophysical plasmas.

## 2. Awards

### Lewis Fry Richardson Medal 2020:



The 2020 Lewis Fry Richardson Medal is awarded to Valerio Lucarini for his outstanding contributions to the fields of extreme value theory and climate science in general, with particular applications to climate modelling and prediction.

The award of the Lewis Fry Richardson Medal to Valerio Lucarini recognises his systematic, original contributions to improving the understanding and methodology of climate forecasting and to exploring and evaluating the potential and limitations of various statistical mechanical and dynamical systems approaches to studying climate change.

He takes advantage of sophisticated mathematical ideas and concepts, adapts and improves them in creative ways, and uses them in order to address fundamental problems in the physical and geophysical sciences. He devotes enormous skill and energy in supporting international collaborations in the nonlinear geosciences.

# Awards 2020

- » The ceremonies for the Outstanding ECS award and the Richardson Medal will be organized in 2020, together with the 2021 awardees

# Richardson Medal Committee

To be approved at Business Meeting

E. Didenkulova

S. Lovejoy

V. Lucarini

E. Ott

T. Palmer

Chair: Annick Pouquet



# New NP president 2021

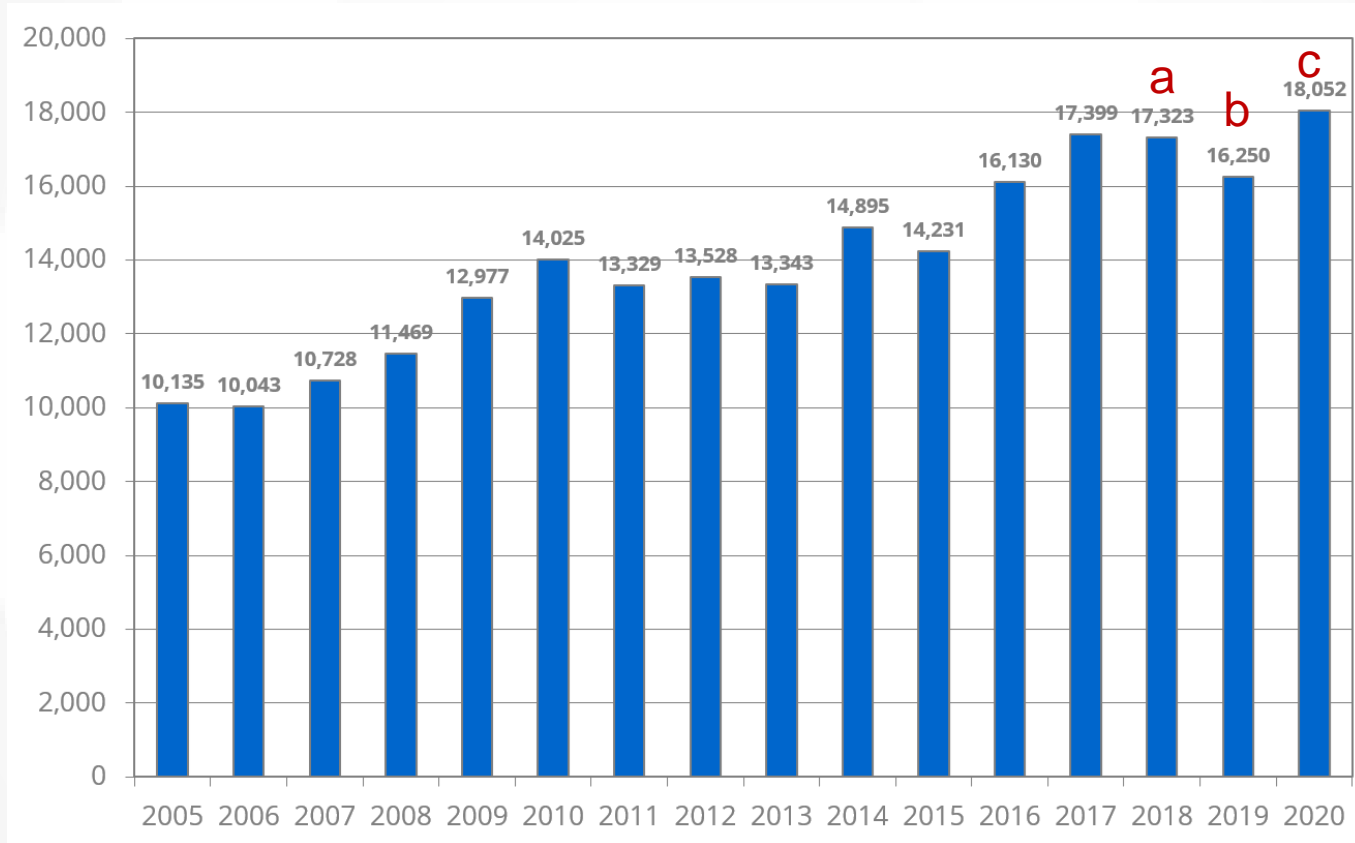
- » François Schmitt
- » Entering in duties during the General Assembly 2021
- » The president-elected will also participate to the council meetings until the GA 2021

# News from the Council

## GA2020 statistics (as of 27 April 2020, 08:30)

- 18,052 abstracts in programme | +11.1% relative to 2019
- 702 unique scientific sessions
- 440 out of 702 scientific sessions are co-organized (62.7%), thereof 37 ITS
- 6/88 short courses online
- 1,135 presentation materials uploaded
- 82 comments to uploaded presentation materials received

## Abstracts in programme 2005 – 2020



- a) 2018: withdrawal of no-show abstracts
- b) 2019: one first-author abstract rule
- c) 2020: Physical GA cancelled 19 March; part of the GA brought online

## Sharing Geoscience Online: New concept

- Online? Yes! Because it is EGU's responsibility to help minimise the impact of COVID-19 on scientific research and collaboration
- Pilot experiment (we would like feedback!)
- Free registration
- Our considerations:
  - Science submitted to the General Assembly 2020 can be presented and shared
  - All authors and conveners can participate, across different time zones
  - Sharing Geoscience Online is accessible (in terms of bandwidth, for anyone with hearing or visual difficulties)
  - The concept works for all presentation types: oral, poster and PICO



## Sharing Geoscience Online in a nutshell

Our concept of Sharing Geoscience allows:

- Authors to upload presentation materials and receive feedback on those from 1 April to 31 May 2020
- Conveners, authors and attendees to discuss abstracts, presentation materials and open questions during a live, text-based chat (4 – 8 May)
- Everyone to participate in Union Symposia, Great Debates, Short Courses, Networking, Division Meetings, #shareEGUart, Photo Competition and more
- EGU to gather experience with online activities and use these in plans for reducing the environmental impact of the General Assembly

Amazing participation to the chat so far (attendance between 60-280)....  
I have heard about real disasters with zoom meetings

# 2020/21 EGU Governance Review

## *Objectives*

A governance review is an opportunity for the EGU to reflect on its governance arrangements in order to best serve the current and future needs of the organisation, the members, the scientific community and global concerns.

In particular, the governance review will:

- determine whether the governance processes and structures of the EGU are fit for purpose
- make recommendations for any changes to better serve the current and future needs of the EGU and its members

### **Objectives of the EGU Governance Review**

To review the governance processes and structures of the EGU, and make recommendations for any changes to enable the organisation:

- to best deliver its [Mission and Vision](#)
- to best serve the current and future needs of the organisation and its members;
- to ensure EGU structures deliver appropriate scientific and professional diversity and representation amongst EGU committees and boards

Terms of Reference: The full EGU Governance Review Terms of Reference [is available to download here](#)

See the additional slides at the end of the presentation

# EGU 2020 statistics: NP division

Active scheduled	1,028
Granted supports	None: 1,028 (100%) ECSTS: 2 (0%)
Presentations	Displays: 1,028 (100%)
Author identification specifics	ECS: 584 (57%)

# NP Sessions 2020 only

Active scheduled	450
Granted supports	None: 450 (100%) ECSTS: 2 (0%)
Presentations	Displays: 450 (100%)
Author identification specifics	ECS: 240 (53%)

(2019, 361, 2018, 502, 2017: 372, 2016, 388; 2015, 391; 2014, 417; 2013, 377)

Programme group		Lead sessions			Co-org. sessions		Total	
		#Abs.	%	#Ses.	#Abs.	#Ses.	#Abs.	#Ses.
US	Union Symposia	30	0	5	0	0	30	5
GDB	Great Debates	0	0	5	0	0	0	5
SCS	Science and Society	0	0	0	0	0	0	0
MAL	Medal and Award Lectures	14	0	48	0	0	14	48
SC	Short courses	0	0	88	0	0	0	88
EOS	Education and Outreach Sessions	198	1%	16	469	24	667	40
NET	Networking	0	0	2	0	0	0	2
ECE	EGU Community Events	0	0	39	0	0	0	39
FAM	Feedback and administrative meetings	0	0	68	0	0	0	68
TSM	Townhall meetings	0	0	109	0	0	0	109
SEV	Side events	2	0	12	0	0	2	12
ITS	Inter- and Transdisciplinary Sessions				1,110	37		
AS	Atmospheric Sciences	1,936	11%	63	1,882	66	3,818	129
BG	Biogeosciences	1,240	7%	49	1,310	49	2,550	98
CL	Climate: Past, Present, Future	1,385	8%	49	2,311	97	3,696	146
CR	Cryospheric Sciences	603	3%	23	657	29	1,260	52
EMRP	Earth Magnetism & Rock Physics	277	2%	9	591	23	868	32
ERE	Energy, Resources and the Environment	546	3%	21	395	15	941	36
ESSI	Earth & Space Science Informatics	262	1%	15	464	21	726	36
G	Geodesy	480	3%	20	212	7	692	27
GD	Geodynamics	477	3%	19	911	40	1,388	59
GI	Geosciences Instrumentation & Data Systems	491	3%	23	391	18	882	41
GM	Geomorphology	620	3%	25	1,395	66	2,015	91
GMPV	Geochemistry, Mineralogy, Petrology & Volcanology	561	3%	19	793	27	1,354	46
HS	Hydrological Sciences	2,501	14%	97	1,731	70	4,232	167
NH	Natural Hazards	1,376	8%	51	2,122	87	3,498	138
NP	Nonlinear Processes in Geosciences	450	2%	15	578	18 <sup>30</sup>	1,028	45
OS	Ocean Sciences	733	4%	26	1,261	51	1,994	77



## Interdisciplinary Events (IE)

A new way to approach interdisciplinarity at the GA.  
Several associated with NP:

ITS2.10/NP3.3

### **Urban Geoscience Complexity: Transdisciplinarity for the Urban Transition**

Co-organized by CL3/ERE7/HS12, co-sponsored by AGU and JpGU

Convener: Daniel Schertzer | Co-conveners: Matthias Demuzere, Klaus Fraedrich, Gabriele Manoli<sup>ECS</sup>, Stefano Tinti

[Displays](#)

| Chat Mon, 04 May, 10:45–12:30

ITS3.1/NP1.2

### **Tipping Points in the Earth System**

Including Lewis Fry Richardson Medal Lecture

Co-organized by CL4/CR7/OS1

Convener: Niklas Boers<sup>ECS</sup> | Co-conveners: Peter Ditlevsen, Timothy Lenton, Anna von der Heydt, Ricarda Winkelmann

[Displays](#)

| Chat Wed, 06 May, 08:30–12:30

ITS4.1/NP4.2

### **Big data and machine learning in geosciences**

Co-organized by AS5/CL5/ESSI2/G6/GD10/HS3/SM1

Convener: Mikhail Kanevski | Co-conveners: Peter Baumann, Sandro Fiore, Kwo-Sen Kuo, Nicolas Younan

[Displays](#)

| Chat Thu, 07 May, 08:30–12:30, Chat Thu, 07 May, 14:00–15:45

SC1.8

**Deep Learning for Geosciences with MATLAB made easy**

Co-organized by AS6/ESSI2/NP9

Convener: Sebastian Bomberg | Co-conveners: Maike Brigitte Neuland, Steve Schäfer

SC4.23

**Meet the NP officers: Thoughts on Nonlinear Processes in Geosciences**

Co-organized by NP9

Convener: Tommaso Alberti<sup>ECS</sup> | Co-conveners: Niklas Boers<sup>ECS</sup>, Reik Donner, Christian Franzke, Vera Melinda Galfi<sup>ECS</sup>

SC2.13

**Thermodynamics of the atmosphere, oceans and climate**

Co-organized by AS6/CL6/NP9/OS5

Convener: Valerio Lembo<sup>ECS</sup> | Co-conveners: Valerio Lucarini, Gabriele Messori<sup>ECS</sup>, Remi Tailleux

SC1.16

**Estimating trends and variability from paleoclimate proxy records**

Co-organized by CL6/CR8/NP9

Convener: Nils Weitzel<sup>ECS</sup> | Co-conveners: Raphael Héber<sup>ECS</sup>, Mira Rehfeld

SC1.10

**Multifractals from Urban to Climate scales: Hands on Big Data analysis and simulation.**

Co-organized by AS6/NH11/NP9/OS5, co-sponsored by AGU

Convener: Ioulia Tchiguirinskaia | Co-conveners: Auguste Gires, Igor Paz<sup>ECS</sup>, Yangzi Qiu<sup>ECS</sup>, Arun Ramanathan<sup>ECS</sup>

SC1.11

**Short Course: Working with big, multi-dimensional geoscientific datasets in Python: an interactive tutorial introduction to xarray and pangeo**

Co-organized by AS6/CL6/CR8/GM14/NP9

Convener: Fabien Maussion<sup>ECS</sup> | Co-conveners: Benoit Bovy<sup>ECS</sup>, Edward A. Byers<sup>ECS</sup>, Joseph Hamman<sup>ECS</sup>, Willi Rath<sup>ECS</sup>

SC1.7

**Machine learning for geosciences : data exploration and modelling**

Co-organized by ESS12/NH11/NP9

Convener: Mikhail Kanevski | Co-conveners: Vasily Demyanov

SC1.3

**Short Course on Writing and maintaining R packages**

Co-organized by CL6/GM14/NP9/SSS10

Convener: Michael Dietze<sup>ECS</sup> | Co-conveners: Sebastian Kreutzer

Rescheduled during the year or for next year

# NP Division Structure

- » [NP1 – Mathematics for Planet Earth](#)
- » [NP2 – Dynamical Systems Approaches to problems in Geosciences](#)
- » [NP3 – Scales, Scaling and Nonlinear Variability](#)
- » NP4 – Time Series, Big data and Machine Learning
- » [NP5 – Predictability](#)
- » [NP6 – Turbulence, Transport and Diffusion](#)
- » [NP7 – Nonlinear waves](#)
- » [NP8 – Emerging Phenomena in the Geosciences](#)
- » [NP9 – Additional co-organized sessions](#)
- » [NP10 – Short courses](#)

To be approved at the Business meeting

## NP Executive Board:

To be approved at the Business meeting

Valerio Lucarini (NP1)  
Christian Franzke (NP2)  
François Schmitt (NP3), and deputy president  
Reik Donner (NP4)  
Olivier Talagrand (NP5)  
Yuliya Troitskaia (NP6)  
Julien Touboul (NP7)  
Henk Dijkstra (NP8)

Daniel Schertzer (publications)  
Stéphane Vannitsem (Programme group chair)  
Davide Faranda (Scientific Affairs)  
Tommaso Alberti (Early Career Scientists)  
Shaun Lovejoy (Division affairs)  
Annick Pouquet (Awards and medals)

## ECS (Early Career Scientists)

- **ECS definition** : “undergraduate or postgraduate (Masters/PhD) student or a scientist who has received his or her highest degree (BSc, MSc, or PhD) within the past seven years\*”
- **ECS @ EGU** :
  - ECS Rep. for each division since 2014 GA (regular Skype meeting), ECS head Rep sitting at Council (not voting), increasing participation in all committees.
  - EGU’s ECS website: [www.egu.eu/ecs/](http://www.egu.eu/ecs/)
- **How to get involved ?** Contact : [ecs-np@egu.eu](mailto:ecs-np@egu.eu)
- **ECS Rep for NP** : Tommaso Alberti



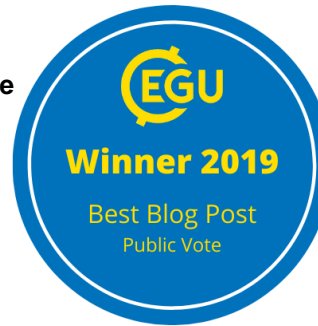
# Division Blog and Social Media

- Division Blog <https://blogs.egu.eu/divisions/np/>
- Start: end of July 2019
- Number of posts: 16
- Total visits: 2861      Unique visits: 2147
- Monthly readers: Mean = 221, Median = 178
- Most read post by *Davide Faranda*:
- “Abrupt Warming could bring our planet a “Hothouse Earth” with catastrophic consequences for our economy and society”
- Post types:
- Interviews, Reviews, Commentary on papers, NPG Paper of the Month, Workshop summaries
- Main browsing countries:
- France (28%), Italy (21%), Germany (10%)

## • Social Media

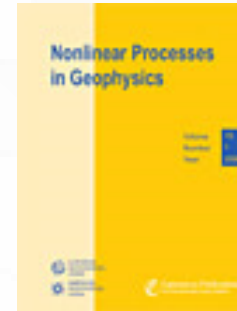
– @EGU\_NP  
@egu\_np

- Channels’ visits: **Twitter (87%), Instagram (13%)**



**Everyone is invited to contribute to the blog and submit posts to the editor Tommaso Alberti ([ecs-np@egu.eu](mailto:ecs-np@egu.eu)).**

# Nonlinear Processes in Geophysics



## **Executive Editors:**

**Ana Mancho**

**Daniel Schertzer**

**Olivier Talagrand**

**Stéphane Vannitsem**



## NPG: the open-access journal of innovative concepts and methodologies in geosciences

Nonlinear Processes in Geophysics (NPG) is an international, inter-/trans-disciplinary, non-profit journal devoted to breaking the deadlocks often faced by standard approaches in Earth and space sciences. It therefore solicits disruptive and innovative concepts and methodologies, as well as original applications of these to address the ubiquitous complexity in geoscience systems, and in interacting social and biological systems. Such systems are nonlinear, with responses strongly non-proportional to perturbations, and show an associated extreme variability across scales.

All sections of NPG are more than ever eager to deal with big data and artificial intelligence with new sensing, analysis, and simulation technologies. These encompass approaches ranging from data-driven research to mathematical physics.

NPG is published by the EGU and is a partner journal of the AGU. It is open-access with a public discussion stage to ensure a more objective review process. NPG maintains sections for research articles, review articles, comments and replies, book reviews, and fast-track NPG Letters. [NPG Letters](#) are short papers with a strong impact. Authors are strongly encouraged to consider publishing in this section.

Exec + Editorial Board discussions since 2018 EGU GA,  
a report to improve NPG (last revision August 2019):

(\* = implemented)

- \*underline AGU partner journal: long lasting collaboration, US based editors  $\approx$  1/3
- \*revise NPG mission/presentation (see above)
- \*Centennial special issue (first proposed to AGU/NP)
- \*create NPG Letters
- create Advisory Board
- \*revise WoS classification => IF 1.7 !
- direct submission of arXiv preprints
- \*introduce 3rd subject entry "Techniques": Theory, Big data and Artificial Intelligence, Simulation

## 6. Calls

- a. EGU Outstanding Early Career Scientist Award 2021  
(deadline 15/6)
- b. EGU Lewis Fry Richardson Medal 2021 (deadline 15/6)

<https://www.egu.eu/awards-medals/>

## GA 2021 timeline (working version)

1 – 19 Jun 2020	Sub-programme structure (call-for-skeleton)
24 Jun – 15 Aug 2020	Public call for GDB and US
24 Jun – 11 Sep 2020	Public call-for-sessions, incl SC
16 Sep – 14 Oct 2020	Session programme finalization
14 Oct 2020 - not fixed	PC Meeting (online)
1 Dec 2020	Support application deadline
13 Jan 2021	Abstract submission deadline



## Other Matters ?

- a. location EGU - GA in 2021: Vienna (Virtual?)
- b. Questions?
- c. Issues to bring to the council.

# 2020/21 EGU Governance Review

## Governance Review Panel:

**Toby Rhodes** (Independent Chair)

**Ulrich Pöschl** (Publications Committee Member, AS)

**Raffaele Albano** (outgoing ECS Representative, NH)

**Susanne Buiter** (outgoing Programme Committee Chair, TS)

**Claudia Jesus Rydin** (Chair, Equalities & Diversity Working Group)

**Katja Fennel** (Chair, Publications Committee, BG, OS)

**Helen Glaves** (outgoing Division President, ESSI)

**Dan Parsons** (Division President, GM)

**Giuliana Panieri** (outgoing Division President, BG)

**Chris King** (Chair of Education Committee)

**Philippe Courtial** (EGU Executive Secretary)

Email: [governancereview@egu.eu](mailto:governancereview@egu.eu)

# 2020/21 EGU Governance Review

## *Objectives*

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## EGU Governance Review Scope: *Timescales & Contact*

### Timescales

- The Governance panel will convene in late May 2020, and conduct their review over the following 9-12 months.
- The Governance Review will produce an interim report to the EGU Council in October 2020, and a final report with recommendations in January 2021.
- The Governance Review will report to EGU members at the 2021 EGU General Assembly. If any changes to EGU governance require EGU Members to vote, this will take place at the EGU General Assembly.
- Implementation of any agreed governance changes will take place following the 2021 EGU general assembly

## EGU Governance Review Scope: *EGU Member Input*

EGU members may input their views to the Governance Review via their divisional representatives on EGU Council

EGU members may also contact the Governance Review Panel directly via email at:

[governancereview@egu.eu](mailto:governancereview@egu.eu)

# Virtual Data Help Desk EGU 2020

## 4–8 May 2020

- Engage with Data Experts
- Learn Skills and Techniques
- Make your Data Open and FAIR



Ask questions through twitter via **#DataHelpDesk**



View short tutorials and demos. Details: [bit.ly/DataHelpEGU20](https://bit.ly/DataHelpEGU20)



A program of EGU, AGU, ESIP,  
EarthCube, and their partners.

