



### 1. BACKGROUND INFORMATION

Name of the body	International Commission on Stratigraphy
Nature of the body (commission/task group/initiative)	Commission
Year when the body was approved by IUGS	1974
Website/social media links	https://stratigraphy.org/
Year of reporting	2024
Submitted by:	
Given Name	Elisabetta
Family Name	Erba
Role in the body	Chair
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Role in the body	Secretary-General
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#### 2. ORIGINAL WORKPLANS FOR 2024

**Provide a short summary** (maximum 500 words) of what was planned for 2024 as stated in your **Annual Report for 2023** 

The ICS comprises seventeen subcommissions (SC), each with their own work plans that collectively represent the work plan of the commission. The Quaternary SC planned to conduct a vote on the Anthropocene and work toward a GSSP for the Upper Pleistocene Subseries. The Neogene SC was working on a GSSP for the Burdigalian Stage and the Paleogene on a GSSP for the Bartonian Stage. The Cretaceous SC planned work on some stage definitions and to vote on the Valanginian Global Stratotype Section and Point (GSSP). The Jurassic SC planned ongoing work on the Callovian and Oxfordian GSSPs and a celebration for the Kimmeridgian GSSP on the Isle of Skye in Scotland. The Triassic SC planned field workshops on the Olenekian-Anisian boundary in Romania and South China and continued work to establish GSSP proposals for the Olenekian and Rhaetian. The Permian SC planned a fieldtrip to the proposed Kungurian GSSP site for additional collections and planned to complete the Kungurian proposal, which is the last Permian stage to be defined. The Devonian and Carboniferous SCs were redefining the Devonian-Carboniferous boundary; the Carboniferous SC also planned a proposal to define the Gzhelian Stage. The Silurian SC planned to focus restudy of the Homerian GSSP and reactivate the Wenlock GSSP working group. They also discussed two stages within the Pridoli Series. The Silurian and Devonian SCs planned a field and business meeting in Sofia, Bulgaria. The Ordovician SC planned to inaugurate a second Auxiliary Boundary Stratigraphic Section for the base-Ordovician in north China. The Cambrian SC continued work on defining remaining provisional stages and examining issues regarding the definition of the base-Cambrian GSSP. The Ediacaran SC planned a field workshop to examine Ediacaran successions in Brazil. They also planned construction of a database of all known end-Ediacaran sections worldwide. The Cryogenian SC planned a white paper to define the base Cryogenian and subdivide the system into three parts. They also planned field trips to Namibia and South China jointly with the Ediacaran SC and continued a successful webinar series. The Precryogenian SC planned to proceed with the ICS vote on the following subdivisions of the Archean Eon: the Lower/Upper Paleoarchean, the Paleoarchean/Mesoarchean boundary, and the Mesoarchean/Neoarchean boundary. The Stratigraphic Classification SC coordinated a special biostratigraphy volume in Newsletters on Stratigraphy. The Timescale Calibration SC planned a session for the 2024 GSA annual meeting and considered how to develop the next Geologic Time Scale book. The Graphics Officer and Webmaster planned to keep ICS website (https://stratigraphy.org/) up to date.

The Graphics Officer Kim Cohen and Webmaster Nic Car, with David Harper and Phil Gibbard, planned an Episodes paper on the developments of the ICS chart over the past 10 years.

All subcommissions planned various sessions at national and international meetings, and in 2024 this activity was concentrated on attendance at the 37<sup>th</sup> International Geological Congress, August 2024 in Busan. The ICS executive planned the attendance at the ICS Business Meeting during the IGC.

#### 3. ACHIEVEMENTS IN 2024

\*Subcommission annual reports were requested and all were received in advance of the new template sent by IUGS Secretariat. As a result, some of the information requested in this new template is not available. For example, we have not counted early career attendance at meetings, but we can do this better next year. Furthermore, the ICS publishes many papers and these are listed in the Appendix 1, but it seems most have not acknowledged IUGS directly. IUGS is sometimes acknowledged indirectly. For example, the book published by Angela Coe in 2022 "Deciphering Earth's History: the Practice of Stratigraphy" provides the logo of IUGS and indicates that the book was endorsed by IUGS (p. 6). In addition, all of our GSSP publications are in Episodes, which includes the IUGS logo and indicates that these are communications of IUGS Geological Standards. Acknowledgements often indicate the additional financial support received by individuals from their national funding agencies. The research to develop our GSSPs is largely supported by individual competitive national science grants. However, our papers can and will better acknowledge IUGS financial support going forward.

#### 3.1 Publications - list 1 to 3 recent publications in which IUGS was acknowledged

Paper	Authors and Journal info (year, volume, pages)	Link to pdf
1)	Turco et al., Episodes, Langhian GSSP	https://doi.org/10.18814/epiiugs/2023/023024
2)	Shen et al., Episodes, 47, 147-177. Wuchiapingian	https://doi.org/10.18814/epiiugs/2023/023023
3)		

### **3.2 Conferences/workshops/etc.** - list 1 to 3 scientific conferences/workshops attended by early career researchers supported by IUGS funds (insert rows if needed)

Name of event (conference/workshop, etc.)	Timeline of Silurian and Devonian Environmental and biotic changes; a SDS event
National/International	International

Name of participant(s) (insert rows if needed)	Hector Barrera Lahoz Stepan Damborsky
Gender	Both Male
Age	27, 28
Affiliation	University of Valencia Masaryk University
Country	Spain and Czechia
Name of event (conference/workshop, etc.)	37 <sup>th</sup> IGC, Busan, South Korea; Session T19-S3
National/International	International
Name of participant(s) (insert rows if needed)	Yu Pei Zijie Zheng
Gender	F and M
Age	Early career
Affiliation	China University of Geosciences (Wuhan)
Country	China

- The most recent 2024/12 version of the ICS Chronostratigraphic Chart, which includes many revised numerical ages, was posted on the ICS website in December. An interactive chart is also available on the website.
- The ICS chart is translated into 20 languages and has been updated to the 2024/12 version.
- Several authors, educators and professional societies were granted permission to freely use and reproduce the ICS International Chronostratigraphic Chart in their productions, but there has been some minimal support from private companies and professional organizations for any commercial use.
- The Quaternary SC held a vote on a proposal for the base-Anthropocene, but the vote was negative and the proposal was not adopted. A joint statement by IUGS and ICS regarding this vote is provided on the ICS website (<a href="https://stratigraphy.org/news/152">https://stratigraphy.org/news/152</a>). Two special sessions and four papers were presented at IGC by Quaternary stratigraphers. Twenty-seven papers were published or submitted in 2024 (appendix 1).
- The Neogene SC published the GSSP for Langhian Stage (https://doi.org/10.18814/epiiugs/2023/023024).
- The Paleogene SC reports that a vote was held in November 2024 on the Bartonian, but it was negative. They developed an immersive virtual experience with 3D models of some of the most significant Paleogene GSSP outcrops. They also report 19 papers published in 2024.
- The Cretaceous SC reported GSSP ceremonies for the Hauterivian and Albian stages during June in Arnayon and La Charce, SE France and for the Barremian during November near Caravaca, SE Spain. They also passed the

Valanginian GSSP and ICS voted in favour during November 2024. The GSSP for the base of the Valanginian Stage (Lower Cretaceous) was then ratified by the IUGS Executive Committee on December 18, 2024.

- The Jurassic SC is now focussed on two candidate sites for the Oxfordian GSSP at Redcliff Point, Weymouth, England and Thuoux, near Aspermont, SE France. Initially they were considering over 60 sites. They are also preparing for the 12<sup>th</sup> Jurassic Congress to be held June 29 to July 3, 2026.
- A total of 96 papers related to Triassic stratigraphy and extreme biotic, environmental and climatic events were published by Triassic stratigraphers in 2024. Four sites are being considered for the Anisian GSSP including Wantou and Guandao sections in South China, the Desli Caira section in Romania and Keira section in Albania. They plan to have the IOB working group to meet during the 5<sup>th</sup> International Conference on Geobiology in Wuhan, China in mid-June. Fieldtrips are also planned for this meeting related to the Triassic, but also Cryogenian to Cambrian strata. The Triassic SC also organized one session and a business meeting at the 37<sup>th</sup> IGC in Busan.
- The Permian SC (SPS) reported that the Episodes paper redefining the Wuchiapingian GSSP was published in 2024 (Shen et al., 2024). A fieldtrip to the probable base-Kungurian GSSP Rockland section in Nevada yielded new fusulinid samples to improve correlation. SPS continued to produce two issues of its newsletter *Permophiles* in 2024.
- The Carboniferous SC reports that a potential GSSP for the Gzhelian Stage is defined at Naqing section, Guizhou Province, South China. A final version will be voted in 2025. Progress continues on the development of a GSSP for the Moscovian Stage and for the revision of the Devonian-Carboniferous boundary. The subcommission is coordinating the effort to host the 20<sup>th</sup> ICCP (International Congress on the Carboniferous and Permian) to be held in Toulouse France late June 2025.
- The Devonian SC (SDS) held a business meeting jointly with the Silurian SC at Sofia, Bulgaria. The subcommission launched a SDS grant system for early career Devonian workers; two 2024 awards were given out (see Section 3.2).
- The Silurian SC (ISSS) reports that IUGS ratified two GSSPs for the Aeronian and Telychian. They also published their newsletter Silurian Times #31.
- The Ordovician SC reported that the official inauguration of the Standard Auxiliary Boundary Stratotype (SABS) for the base-Ordovician took place in June 2024 in north China. They were involved with an international meeting of IGCP 735 as well as several business meetings.
- The Cambrian SC reports that new working groups for Stages 2-4 have been established and that some progress has occurred on developing a working group for Stage 10.

- The Ediacaran SC reports a joint field excursion with the Cryogenian SC in Brazil during late 2023. A special issue of the Journal of Paleontology (98/2 March 2024) was published on Ediacaran stratigraphy.
- The Cryogenian SC reports a MagellanPlus Workshop in London (July 14-16) followed by a business meeting that resulted in a final draft for criteria to define the Tonian/Cryogenian boundary.
- The Precryogenian SC is currently debating the status of the Eoarchean. Should it stand or should it become an informal Lower Paleoarchean? Two papers on the topic were published in Episodes in 2024.
- The Stratigraphic Classification SC (ISSC) reports that three papers on biostratigraphy were published as a special issue of Newsletters on Stratigraphy. These papers summarize graptolite, conodont, and foraminifer biostratigraphy. ISSC also organized a session at EGU in Vienna and conducted a business meeting at the 37<sup>th</sup> IGC meeting.
- The Timescale Calibration SC collaborated with GSA on the publication of the GSA Timescale and worked with the ICS Executive including Graphics Officer Kim Cohen and Webmaster Nic Car on reviewing the numerical ages on the latest International Chronostratigraphic Chart (2024/12) of ICS.
- Kim Cohen and Nic Car have been updating and ungrading the ICS website to improve digital representation and make it more interactive.
- The new ICS Executive and Subcommission voting members were finalized during the 37<sup>th</sup> IGC in Busan, South Korea. Considerable changes in membership of the Subcommissions had been required following a review of their composition and compliance with the statutes of the ICS. Many early career scientists were recruited for 2024-2028, and significant improvements in equality, inclusion and diversity of memberships achieved. The changes are regarded as a positive outcome of the review, with an expectation of increased activity within previously less active subcommissions.
- The ICS executive (18 in attendance) met for a business meeting on Monday August 26<sup>th</sup> at 08:00 Korean Standard Time.
- The new ICS executive (22 in attendance) met via zoom with all SC chairs (or their representatives) on November 27<sup>th</sup>, 2024. It is planned that these meetings will occur 3 or 4 times per year.
- The ICS executive also met via zoom with the Time Scale calibration SC on December 4<sup>th</sup>, 2024 to discuss new protocols to better coordinate numerical time scale changes in the Geological Time Scale.
- The ICS Vice-Chair, Shuzhong Shen, was named as the ICS representative for the Deep-time Digital Earth (DDE).
- The ICS executive prepared a call for proposals for the next STRATI meeting to be held in 2026 or 2027. The proposals are due January 3, 2025 and will be evaluated in January 2025.

### **3.3 Other products:** list any activity that was supported by funds allocated by IUGS (insert rows if needed)

Nature of the activity	
National/International	
Name of participant(s) (insert rows if needed)	
Gender	
Career status (early/mid/late)	
Affiliation	
Country	

#### 4. INTERACTIONS

#### 4.1 Interaction with other bodies within IUGS

Name of the IUGS Bodies	type of interaction and which are the results (e.g., joint workshop/publication/session at international conferences, etc)
International Commission on Geoheritage	Several contributions toward the IUGS Second 100 sites book and the IUGS First 55 Stones book.
IUGS (Geosites Programme)	Recognition of some GSSP sites.
IUGS Commission on Geoscience Information	Collaboration on format for geoscience data
IGCP projects	Participation and coordination of numerous projects.

### 4.2 interaction with other international organizations and/or projects outside IUGS

Active interfaces with many international organisations and geo-projects are a standard feature of ICS activities.

Name of the INTERNATIONAL ORGANIZATIONS AND/OR PROJECTS	type of interaction and which are the results (e.g., joint workshop/publication/session at international conferences, etc)
International Quaternary Association INQUA	Coordinated effort on Quaternary stratigraphy
Commission for the Geological Map of the World	Standardization of chronostratigraphy and colour schemes on maps and charts
International Ocean Drilling Project	ICS stratigraphers participate in many IODP projects and sites that are used to test correlations and climate models
UNESCO (Geoparks)	Conservation of some of our GSSP sites.

#### **5. INCOME IN 2024**

SUBVENTIONS	USD
From IUGS	77,000
From other sources (specify, insert rows if needed)	*
TOTAL	77,000

<sup>\*</sup>Few of the subcommissions have formal financial contributions from external sources other than IUGS (through ICS). Informally, every officer and member of ICS donates their own time, office space, institutional facilities, and other components to the activities of the organization. No officer, nor executive receives any salary compensation from IUGS or other ICS funds. Most officers partially contribute towards their own travel and expenses through their research grants associated with national funding agencies. This has not been factored into our cost structure.

#### 6. EXPENDITURES IN 2024

Provide information on expenditures on activities that IUGS supported financially in 2024; insert categories in new rows if needed

ACTIVITIES	USD
Personnel costs	547.00
Conferences/congresses/workshops *	38,560.00
Dedicated meetings/fieldwork of the body	30,193.00
Publications fees **	0
Dissemination/outreach/website	700.00
Other costs (specify)	4,000.00
TOTAL EXPEDITURES ***	74,000.00

For the detailed Expenditures report, please complete the spreadsheet "Reported Expenditures" in IUGS Annual Report 2024 NAME OF THE BODY.xls

<sup>\*42,150</sup> USD was requested to attend the 37<sup>th</sup> IGC. Approximately, 90% of the conference expenditure was on IGC. Some funds were spent on EGU and GSA meetings.

\*\*To our knowledge publication fees (open access etc.) have not been requested, nor provided to subcommission personnel. Everyone pays for such fees from their personal research grants. To include this item would substantially increase budget request.

\*\*\*77,000 USD was granted by IUGS from an initial request of 96,339.00. \$4000 was set aside as contingency and \$3000 was not released to the Triassic Subcommission.

#### 7. OBJECTIVES AND WORKPLANS FOR THE YEAR 2025 - short term plan

Objectives (maximum 300 words presented in bullet points)	
Workplan (in bullet points)	<ul> <li>The Quaternary SC (SQS) will revise its various working groups to increase productivity and develop an Upper Pleistocene GSSP.</li> <li>The Neogene SC (SNS) will form a new Working Group to determine a GSSP for the Burdigalian.</li> <li>The Paleogene SC (ISPS) is focussed on redeveloping the Bartonian GSSP and will organize a workshop during the Annual meeting of the Micropaleontological Society in Pisa.</li> <li>The Cretaceous SC (SCS) will submit a GSSP proposal for the Aptian to their voting membership in 2025. They also plan a celebration for the recently ratified Valanginian GSSP. A meeting will be held during the Cretaceous Symposium.</li> <li>The Jurassic SC (ISJS) will continue to organize their 12th Jurassic Congress to be held in 2026. They seek funds to support at least 5 low economic status researchers at the congress. They also intend to raise the profile of research on the Jurassic of Africa. They will finalize proposals for the Oxfordian GSSP in 2025.</li> <li>The Triassic SC (STS) plans a field workshop in Romania May 27-30 on the Anisian GSSP.</li> <li>The Permian SC (SPS) will vote on a Kungurian GSSP proposal in 2025 and is considering possible revisions to the Roadian and Wordian stage GSSPs. Permophiles 78 and 79 will be published in 2025.</li> <li>The Carboniferous SC (SCCS) is organizing the GeoTolosa Meeting (see below). SCCS plans to reorganize working group memberships and include membership on North Africa, South America and India. They plan to submit a Gzhelian GSSP proposal in 2025.</li> <li>The Devonian SC (SDS) will meet at GeoTolosa where they will discuss proposed redefinition of the Emsian Stage.</li> </ul>
	ino Emoian Otago.

	<ul> <li>The Silurian SC (ISSS) will conduct a field meeting, scientific session, and business meeting in association with the celebration for ratification of Telychian GSSP at Andalusia Spain in September.</li> <li>The Ordovician SC (SOS) plans several business meetings including in association with the closing of IGCP 735 in Changsha, China in October. Ordovician News 42 will be published in 2025.</li> <li>The Cambrian SC (ISCS) continues to work toward defining its remaining provisional stages.</li> <li>The Ediacaran SC plans a field workshop in Newfoundland Canada on August 4-13. They will publish their annual newsletter early in 2025.</li> <li>The Cryogenian SC plans to finalize criteria for a Cryogenian GSSP by March. They plan a business meeting and fieldtrip in association with the 5<sup>th</sup> International Conference on Geobiology in June. They also plan a field trip to north Namibia in October.</li> <li>The Precryogenian SC plans a field workshop in Western Australia. They will proceed to an ICS vote of Archean subdivisions in 2025.</li> <li>The Stratigraphic Classification SC plans business meeting at EGU in Vienna and continue with efforts on chapters on Biostratigraphy and Chronostratigraphy.</li> <li>The Time Scale Calibration SC indicates that a fully interactive database of dates used for calibration of GTS2020 will go live on the ISTC website.</li> </ul>
Planned conferences (in bullet points)	<ul> <li>SQS members will attend INQUA in Vienna and have a dedicated session on the Early and Middle Pleistocene.</li> <li>SCS will discuss ongoing work on other GSSP proposals at the 12<sup>th</sup> Cretaceous Symposium scheduled for Hannover, Aug. 31 to Sept. 5.</li> <li>STS plans a symposium and field excursion in South China with the 5<sup>th</sup> International Conference of Geobiology in Wuhan.</li> <li>Many members of SPS, SCCS, and SDS will attend the GeoTolosa meeting in Toulouse France June 24-27, which includes the 20<sup>th</sup> ICCP (International Congress on the Carboniferous and Permian) and the Variscan Meeting 2025 with SDS. The budget for these subcommissions relates largely to this combined meeting.</li> <li>Some subcommission members and business meetings will be held at EGU in Vienna and GSA in San Antonio.</li> </ul>

Planned publications (in bullet points)	<ul> <li>SCS will submit a paper to Episodes documenting the ratified Valanginian GSSP.</li> <li>A special volume on Biostratigraphy in Newsletters on Stratigraphy in late fall 2025.</li> <li>Cohen et al. in Episodes. "The ICS International Chronostratigraphic Chart this decade".</li> <li>Numerous other papers are projected or in preparation for 2025 or later.</li> </ul>	
Other activities (in bullet points)	<ul> <li>At least three zoom webinars/meetings will be organized by the ICS executive for ICS members.</li> <li>The next STRATI Meeting will be decided.</li> </ul>	

### 8. CRITICAL MILESTONES TO BE ACHIEVED FOR THE PERIOD 2024–2026 – midterm plan (maximum 500 words in bullet points)

- Increase the rate of completion of GSSPs over the next two years with a projected completion of all Phanerozoic GSSPs by 2028 for the next IGC.
- Organize Strati 2026 (or 2027). This meeting is held between IGC meetings and is a primary venue for advancing the goals and objectives of the ICS. A competition among three viable bids is currently ongoing.
- The Subcommission on Time Scale Calibration is currently applying for a Penrose conference in early June 2026 that is intended to be a major step toward developing the next Geological Time Scale book in 2030.
- Develop a template for GSSP proposals to provide some standards for publication in Episodes.
- Promote the wider development and application of integrated stratigraphy, using as many stratigraphic tools as possible.
- Our GSSPs define stage boundaries. The next step is to consider the best way to characterize the "space" within stages (e.g. astrochrons, biozones, magnetochrons).

#### 9. BUDGETARY PROPOSALS FOR 2025

Budgetary proposal on activities to be supported by IUGS for 2025. This needs to align with the **workplans for the year 2025**; insert categories in new rows if needed

ACTIVITIES	USD
Personnel costs	512.73
Conferences/congresses	28,939.85
Dedicated meetings/fieldwork of the body	49,623.17
Publications fees	0
Dissemination/outreach/ website	3350.00
Other costs (specify)	

TOTAL REQUESTED BUDGET	82,425.75	

Please fill the spreadsheet "Proposed\_Budget" in IUGS Annual Report 2024 NAME OF THE BODY.xls

### Annex:

### **1. DESCRIPTION** (maximum 1000 words)

Name of the BODY	International Commission on Stratigraphy
Divisions (e.g., subcommissions, task groups/working groups, etc.) under the main body if any	The ICS comprises seventeen subcommissions (SC); fifteen are based on the systems (periods) of Geologic Time and include the Subcommission on Quaternary Stratigraphy, the Subcommission on Neogene Stratigraphy, the Subcommission on Paleogene Stratigraphy, the Subcommission on Cretaceous Stratigraphy, the Subcommission on Jurassic Stratigraphy, the Subcommission on Triassic Stratigraphy, the Subcommission on Permian Stratigraphy, the Subcommission on Carboniferous Stratigraphy, the Subcommission on Devonian Stratigraphy, the Subcommission on Silurian Stratigraphy, the Subcommission on Crdovician Stratigraphy, the Subcommission on Cambrian Stratigraphy, the Subcommission on Cryogenian Stratigraphy, and the Subcommission on Precryogenian Stratigraphy. The Subcommission on Stratigraphic Classification and the Subcommission on Timescale Calibration have specific tasks as defined by their names.  The International Commission on Stratigraphy (ICS)
Aims and Objectives	is a body of stratigraphy experts with the primary objective of defining global units (systems, series, stages) of the International Chronostratigraphic Chart. Global Stratotype Sections and Points (GSSPs) establish the definitions of these units. These results form the basis for the units (periods, epochs, and ages) of the International Geologic Time Scale (GTS). In doing so, the ICS provides global standards for expressing the history of the Earth.
Indicate, if possible, how your activities align with the goals of the United Nations Sustainable Development, see https://sdgs.un.org/goals	ICS activities align with quality education (goal 4) related to the Earth. Those that appreciate more about the history of our planet Earth better support sustainable practices. Stratigraphic correlation helps to identify the location of water and energy resources (goals 6 & 7). Many members of the ICS community have a unique perspective on climate (goal 13) change because they study similar events that occurred in the geologic past. Paleontologists who study ancient life on the land (goal 15) and below the water (goal 14) can provide important perspectives on the fragility of life.

#### 2) DIRECTORY OF OFFICERS 2024-2028 \*

Please provide a summary of information on all officers of the main body (e.g. commission) as well as of the various divisions within the main body (e.g. subcommission/task groups/working groups, etc..) in the spreadsheet "Directory Officers" in IUGS Annual Report 2024 NAME OF THE BODY.xls

Personal data are protected in accordance to the GDPR 2016/679 - European regulation on the protection of personal data.

#### Note \*

Additional information about the membership of each subcommission and their budgets and work plans are provided in Appendix 1 (Reports by all Subcommissions). These were completed prior to delivery of the new reporting template. Additional information on budget request is available upon request.