Copernicus FICE 2025
**Training on
In situ Ocean Colour Above-Water Radiometry towards Satellite Validation**

Introduction to the CRediT taxonomy
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PROGRAMME OF THE EUROPEAN UNION
Copernicus Europe's eyes on Earth
IMPLEMENTED BY EUMETSAT
FRM4SOC Phase-2
fiducial reference measurements for satellite ocean colour
CNR ISMAR ISTITUTO DI SCIENZE MARINE
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CRediT

CRediT (Contributor Roles Taxonomy) is a high-level taxonomy, including 14 roles, that can be used to represent the roles typically played by contributors to research outputs. The roles describe each contributor's specific contribution to the scholarly output.

https://credit.niso.org
Contributor roles introduced in Allen et al. (2014) and updated in Brand et al. (2015) and Allen et al. (2019)

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How can we ensure visibility and diversity in research contributions? How the Contributor Role Taxonomy (CRediT) is helping the shift from authorship to contributorship

Liz Allen ✉, Alison O'Connell, Veronique Kiermer

Allen, L.; Brand, A.; Scott, J.; Altman, M.; Hlava, M., Credit where credit is due. Nature 2014, 508 (7496), 312-313.

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Brand, et al. 2015 Beyond authorship: attribution, contribution, collaboration, and credit. https://onlinelibrary.wiley.com/doi/abs/10.1087/20150211

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TABLE 1 Contributor Roles Taxonomy (CRediT).

Term	Definition
Conceptualization	Ideas; formulation or evolution of overarching research goals and aims
Methodology	Development or design of methodology; creation of models
Software	Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components
Validation	Verification, whether as a part of the activity or separate, of the overall replication/reproducibility of results/experiments and other research outputs
Formal analysis	Application of statistical, mathematical, computational, or other formal techniques to analyse or synthesize study data
Investigation	Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection
Resources	Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools

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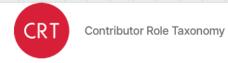Brand, et al. 2015 Beyond authorship: attribution, contribution, collaboration, and credit.
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Data curation	Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later re-use
Writing – original draft	Preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation)
Writing – review and editing	Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision – including pre- or post-publication stages
Visualization	Preparation, creation and/or presentation of the published work, specifically visualization/data presentation
Supervision	Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team
Project administration	Management and coordination responsibility for the research activity planning and execution
Funding acquisition	Acquisition of the financial support for the project leading to this publication

How to implement CRediT

For researchers

When doing research, and especially as part of a team, **best practice is always to ensure that there is clarity of roles at the beginning and throughout a research project**. This will help to speed things up and avoid confusion and potential disputes at the time of reporting and writing work up, and when individuals may need to describe their contributions according to the CRediT taxonomy.

Many publishers now request contribution information using CRediT.

When you are getting ready to submit an article to a journal or publisher that uses CRediT, **make sure that you have discussed and agreed with your co-authors and contributors the roles that individuals have played.**

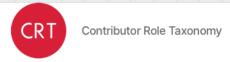https://credit.niso.org

How to implement CRediT

Remember:

Agree and assign roles in advance – when submitting work for publication to a journal that requires CRediT, the submitting and/or corresponding author/s will typically be required to assign CRediT roles across the author and contributor list. Where a publisher or journal does not require CRediT, you can choose to provide contributor information using CRediT in an 'Author note', 'Contribution statement' or 'Acknowledgement' section;

Individuals can have several roles – it is common that researchers will have made several contributions to a research output (e.g. article) and can therefore be assigned to more than one CRediT role;

The same role can be assigned to multiple individuals – a specific CRediT role can also be assigned to multiple individuals;

Some roles won't apply – each research output is different; if specific CRediT roles are not relevant to a particular output, they do not need to be included.

https://credit.niso.org

How to implement CRediT

Examples

Author contributions

LG: Conceptualization, Data curation, Formal Analysis, Methodology, Software, Validation, Visualization, Writing–original draft. VB: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Methodology, Validation, Writing–original draft. JC: Conceptualization, Methodology, Software, Writing–review and editing. CG: Data curation, Software, Writing–review and editing. AID: Funding acquisition, Writing–review and editing. DD: Funding acquisition, Writing–review and editing. AD: Data curation, Software, Writing–review and editing. DV: Data curation, Software, Writing–review and editing.

Author contributions. JP, VEB: conceptualization of the study, development or design of the methodology, validation, and writing (review and editing). JP: data curation, formal analysis, software, visualization, and writing (original draft preparation). VEB: funding acquisition and project administration.

Author Contributions: Conceptualization, V.E.B., D.D., and M.S.; methodology, V.E.B., D.D., and M.S.; software, V.E.B., S.C., D.D., and M.S.; validation, V.E.B., M.B., A.D.C., and M.S.; formal analysis, V.E.B. and M.S.; in situ data curation, J.A., M.B., S.C., and S.K.; satellite data curation, S.C.; writing—original draft preparation, V.E.B., D.D., and M.S.; writing—review and editing, J.A., M.B., S.C., A.D.C., and T.K.; visualization, V.E.B. and M.S.; supervision, V.E.B. and D.D.; project administration, V.E.B.; funding acquisition, V.E.B. and D.D. All authors have read and agreed to the published version of the manuscript.

CRediT taxonomy uptaken by PLoS, Elsevier, MDPI, etc. from 2016 onwards:
https://theplosblog.plos.org/2016/07/author-credit-plos-and-credit-update/

We strongly encourage each group of researchers to think about, discuss and decide on their **various contributions during the course of manuscript preparation**.

The task of assigning contributions to individuals should be collegial, and **the corresponding author should ensure that contributions are agreed on amongst authors** before submission, in the same way that the ordering of authors should be agreed on before submission.

The CRediT taxonomy offers a framework for discussion to reach this agreement.

CRediT taxonomy uptaken by PLoS, Elsevier, MDPI, etc. from 2016 onwards:
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It's worth repeating—before submission, decide and get agreement on:

- Who will be included in the author list

- What contributions each author has made

- In what order the authors will appear

And if there are contributors whose input does not rise to the level of authorship, **ensure that proper acknowledgements are included**.

Every person named – authors and those acknowledged – **must be aware** of and agree to their inclusion.

When preparing your next manuscript, take some time to discuss author contributions using CRediT as a common language.