


iGOS4M - Global Observation System for Mercury Isotopes:

<https://sites.google.com/view/igos4m/home>

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iGOS4M

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iGOS4M - Global Observation System for Mercury Isotopes

An online database for mercury stable isotope observations in support of the Minamata Convention on mercury.

iGOS⁴M is the mercury isotope chapter of **GOS⁴M** (Global Observation System for Mercury), which is aimed to support the MC Secretariat, the UN Environment and all Nations in the implementation of the Minamata Convention on Mercury and the activity related to the Effectiveness Evaluation and Global Monitoring framework.

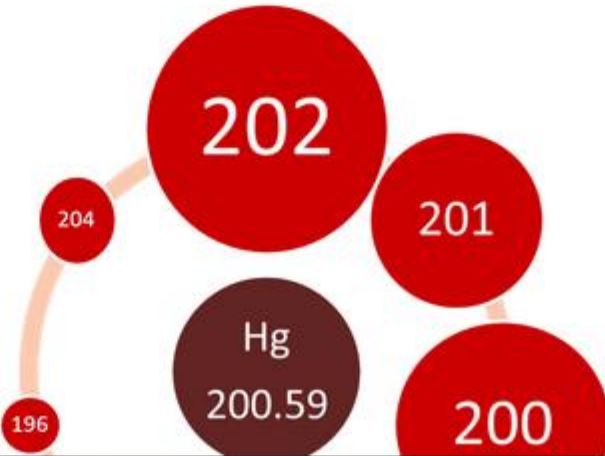
iGOS⁴M is an international effort with multiple objectives:

1. Organize peer-reviewed mercury isotope data into a single online open access database.
2. Share mercury isotope concepts, sampling and measurement protocols, and tutorials.
3. Promote mercury isotope signatures as essential variables of the GOS⁴M monitoring efforts.
4. Enable the design and production of mercury isotope applications in support of policy implementation.



iGOS4M Database

A preliminary database is available [here](#) and was published by [Kwon et al., 2019 EearthScRev](#)



iGOS4M Tutorials

Presentations of mercury isotope analysis

GOS⁴M Kick-off Meeting, 2020 7-8 October

GEO | GOS⁴M
GLOBAL OBSERVATION SYSTEM FOR MERCURY

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GLOBAL OBSERVATION SYSTEM FOR MERCURY

iGOS⁴M international steering committee (bi-monthly VideoConf):

Jeroen Sonke, CNRS, France

Sae Yun Kwon, POSTECH UST, Korea

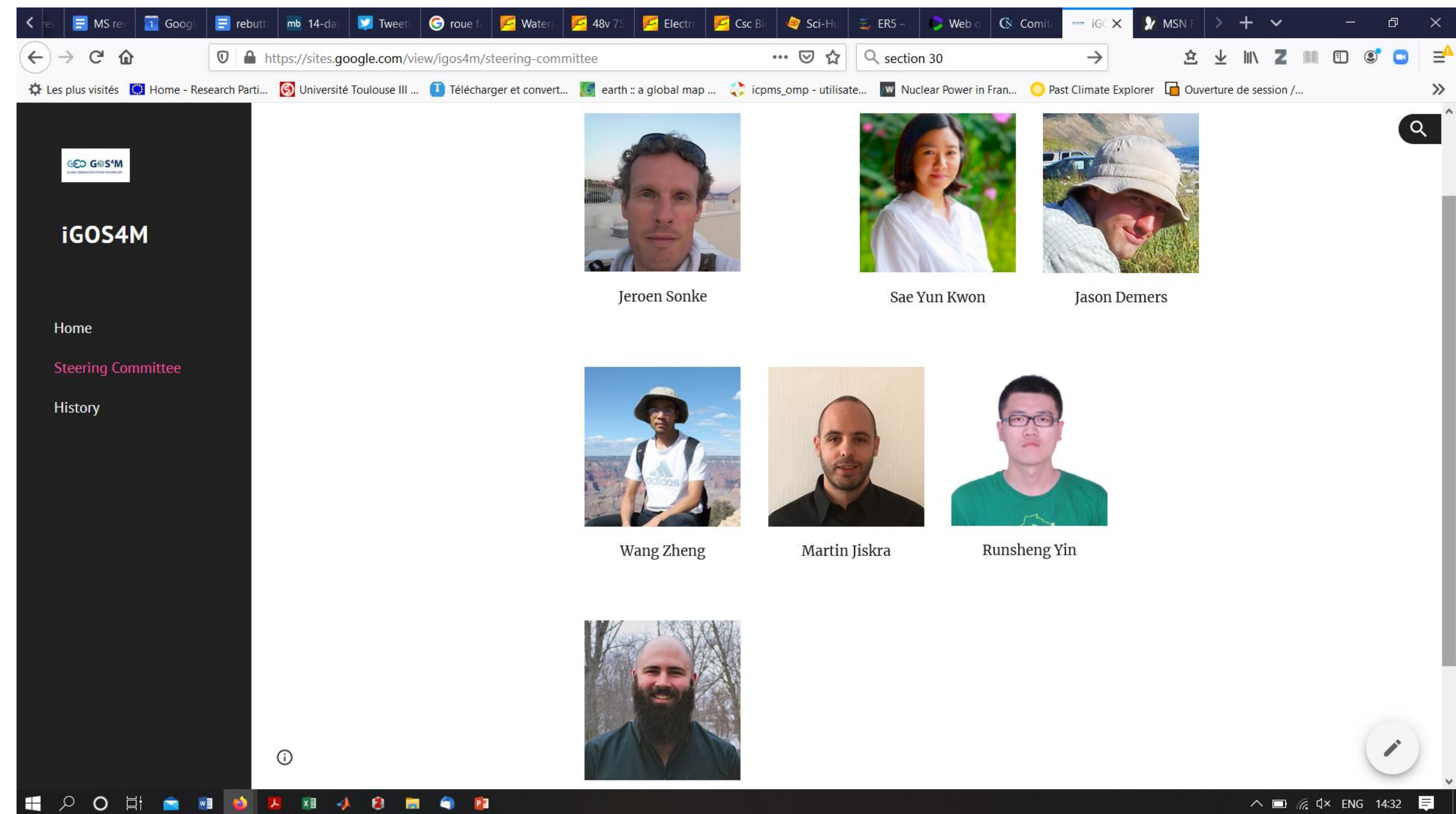
Jason Demers, Univ. Michigan, USA

Ryan Lepak, NSF, USA

Wang Zheng, Univ. Tianjin, China

Runsheng Yin, CAS, China

Martin Jiskra, Univ. Basel, Switzerland



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GLOBAL OBSERVATION SYSTEM FOR MERCURY

iGOS⁴M Open Access database

- By the community, for the community
- >200 papers; ~3,874 peer-reviewed Hg isotope measurements (2001-2018) → 7,000 by 2021 and 20,000 by 2030.
- Developed in Gsheets → 2021 transfer to professional CNRS website?
- QA/QC currently based on peer-review
 - Database includes QA/QC results on reference materials
 - iGOS4M will produce review papers on consensus CRM $\delta\Delta$ values
 - iGOS4M QA/QC proposes a library of sampling, preparation and analysis protocols.
- Data policy: free access, cite original studies

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iGOS⁴M Objectives:

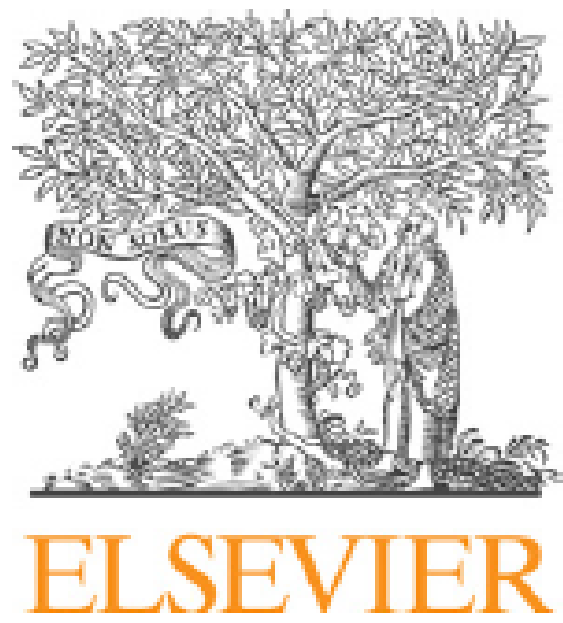
- Organize peer-reviewed Hg mercury isotope data into an online open access database.
- Share mercury isotope concepts, sampling and measurement protocols, and tutorials.
- Promote mercury isotope signatures as essential variables of the GOS4M monitoring efforts.
- Enable the design and production of mercury isotope applications in support of policy implementation.

Hg isotope review and position paper



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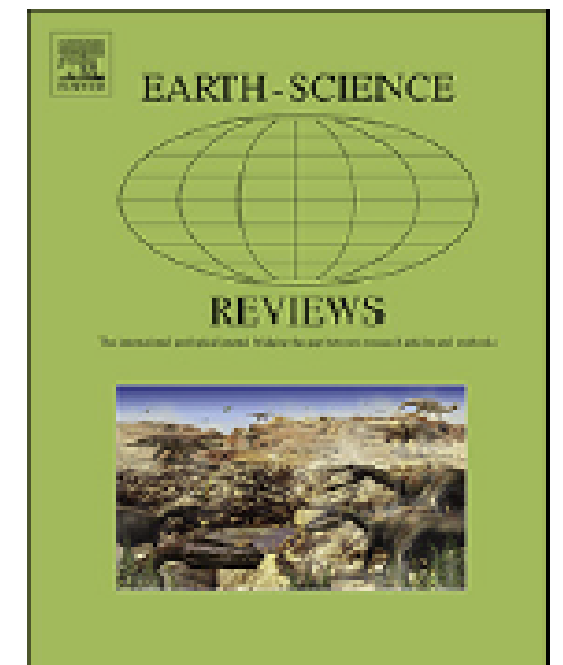
Earth-Science Reviews 203 (2020) 103111



Contents lists available at [ScienceDirect](#)

Earth-Science Reviews

journal homepage: www.elsevier.com/locate/earscirev



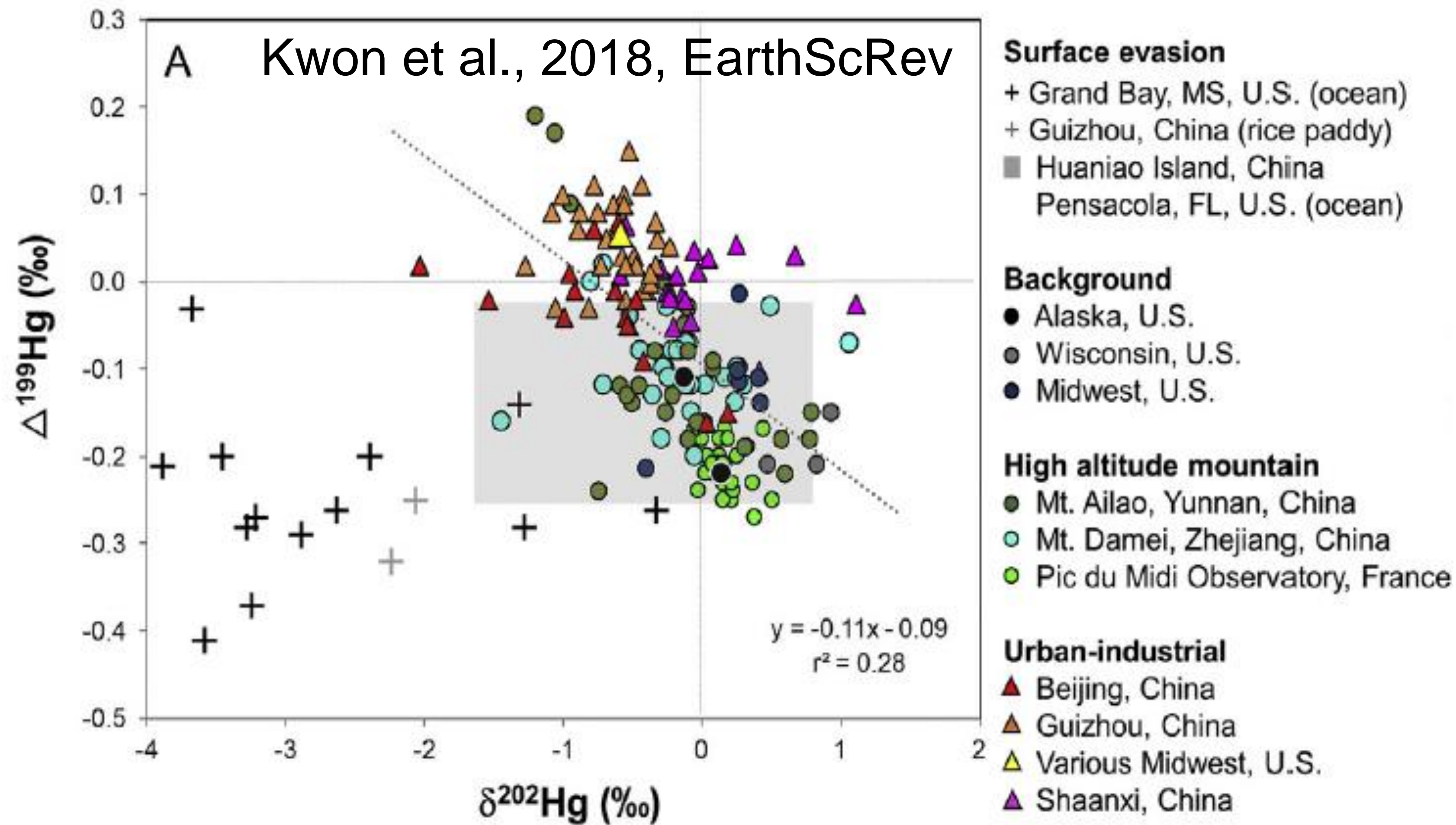
Invited review

Mercury stable isotopes for monitoring the effectiveness of the Minamata Convention on Mercury



Sae Yun Kwon^{a,*}, Joel D. Blum^b, Runsheng Yin^c, Martin Tsz-Ki Tsui^d, Yo Han Yang^a,
Jong Woo Choi^e

TGM isotope emission source tracing

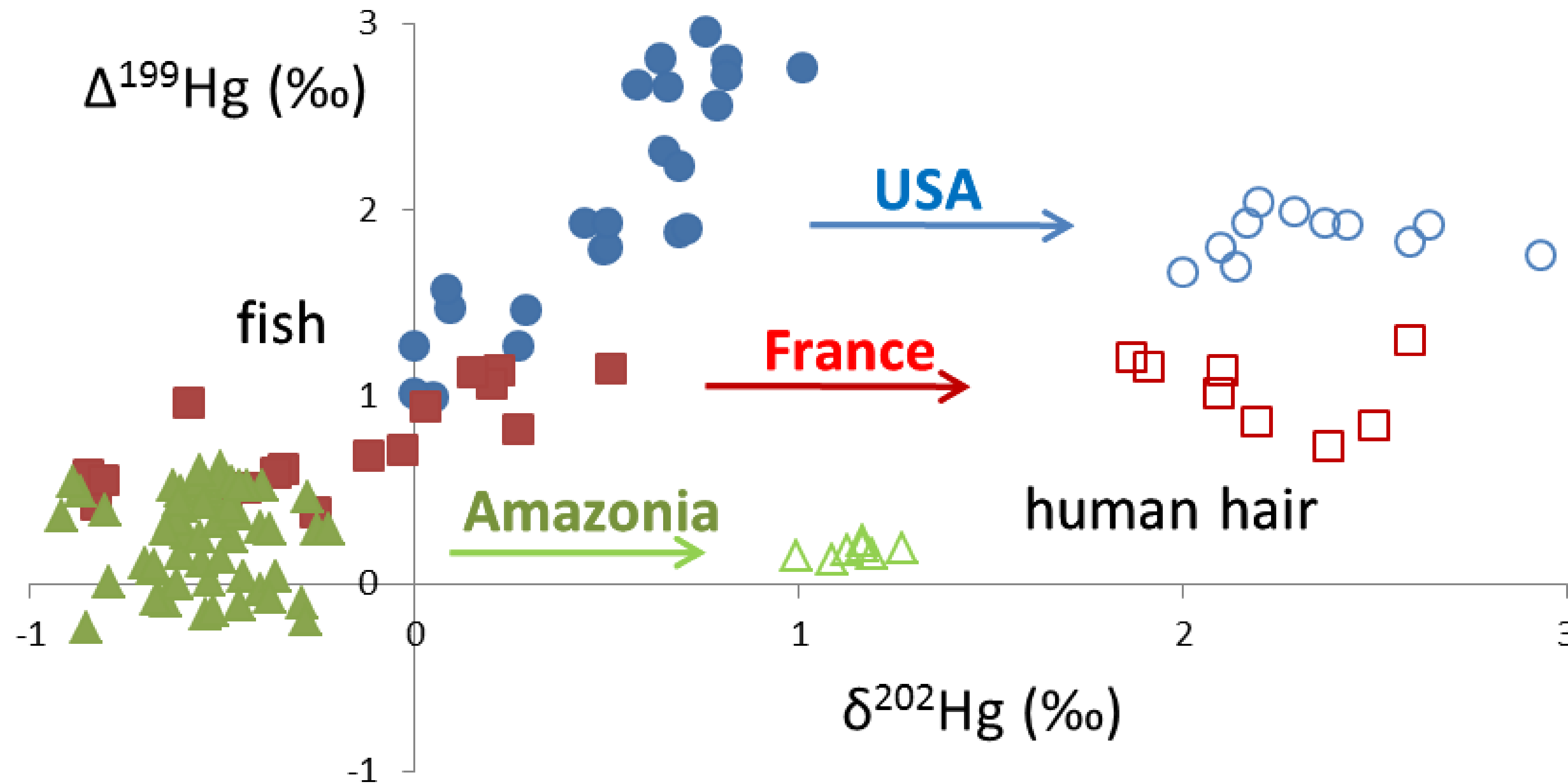


TGM Hg isotopes discern anthropogenic from background emissions.
1-year TGM isotope time-series soon available for 10 sites globally

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Human hair Hg isotopes identify MeHg exposure sources

Fish: Laffont et al., ES&T, 2009, 2011; Senn et al., ES&T, 2009; Blum et al., Ngeo 2013

Human hair: Laffont et al., ES&T, 2009, 2011; Sherman et al., ES&T, 2013

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Recommended Global Mercury isotope Monitoring for MC Effectiveness Evaluation:

1. Atmospheric Hg(0), rainfall, THg isotopes
2. Biomonitoring:
 - Tuna THg isotopes
 - Bivalve THg isotopes
 - Human hair THg isotopes
3. River dissolved and particulate Hg isotopes (integrated watershed Hg release)
4. Hg Hotspots, e.g. river sediment, atmospheric PBM monitoring

Kwon et al., 2018, EarthScRev