

Personal details

Name: Jaakko Sakari Salonen
E-mail: sakari.salonen@helsinki.fi
Home page: www.helsinki.fi/~ssalonen



Profile

I am a geologist and research scientist specialized in paleoclimatology, the study of Earth's past climate changes. I am also an active science communicator and popular-science writer.

Degrees and titles

- 2017 Docent in Paleoclimatology, University of Helsinki
2012 PhD in Geology, University of Helsinki
Grade: *Pass with Distinction*; Minor in statistics (33 ECTS credits).
2006 MSc in Geology and Palaeontology, University of Helsinki
Grade: *Eximia cum laude approbatur*; Minors in computer science (74 cr) and physics (29 cr)
Other studies: 2017–2022, University pedagogy, University of Helsinki (15 cr)

Current employment

- 9/2020– Academy of Finland Research Fellow, University of Helsinki,
Department of Geosciences and Geography

Past employment

- 3/2014–8/2020 Post-doctoral researcher, University of Helsinki, Department of
Geosciences and Geography
Included a 12-month research visit to Université de Bordeaux (France)
1/2013–12/2019 Editorial secretary, Geological Society of Finland (part-time)
1–6, 9–11/2013 Post-doctoral researcher, Stockholm University (Sweden),
Department of Physical Geography and Quaternary Geology
9/2007–1/2012 Project scientist and PhD student, University of Helsinki, Department
of Geosciences and Geography
6/2006–9/2006 Intern, Geological Survey of Finland, Marine Geology Group
1997–2007 Various jobs during studies (part-time)

Skills

Computing: R, QGIS, ArcGIS (excellent); HTML, Python, Java, SQL (basic)
Analytical techniques: Micropaleontology, statistics, machine learning
Languages: Finnish (native), English (fluent), Swedish (intermediate), German (basic)

Publications

40 peer-reviewed papers (*h*-index 23); numerous popular-scientific publications
(For a full list of publications, see Appendix: next page)

APPENDIX: LIST OF AWARDS, PUBLICATIONS AND ACTIVITIES

Grants

2023: Formas (Sweden), 3-year project funding (co-applicant) (260,000 €)
Project “Resolving the Euro-Atlantic Temperature Conundrum of Rapid Deglaciation“, lead by Frederik Schenk

2020: Formas (Sweden) 3-year project funding (co-applicant) (270,000 €)
Project “Palaeoclimatic perspective on the latest European heat waves”, lead by Frederik Schenk

2020: Academy of Finland, 5-year Academy Research Fellow funding (1,100,000 €)
Project “Climate shocks: exploring abrupt events in the palaeoclimate record“

2017: Academy of Finland, 3-year Postdoctoral Researcher funding (345,000 €)
Project “Patterns, drivers, and abrupt change during warm interglacial climates“

2014: Finnish Cultural Foundation, 12-month post-doctoral grant (26,000 €)
Project “Reconstruction of the last glacial-interglacial cycle in Fennoscandia“

Minor grants: 2021, Finnish Society of Sciences and Letters, grant for research costs; 2021, Arctic Avenue spearhead project, grant for research costs (co-applicant); 2011, University of Helsinki, 3-month grant for doctoral work

Awards

2022: Lauri Jäntti Prize (20,000 €)
A literature prize awarded annually to the best nonfiction book published in Finland

Publications

Research papers (peer-reviewed)

Pearce EA, Mazier F, Normand S, Fyfe R, Andrieu V, Bakels C, Balwierz Z, Bińka K, Boreham S, Borisova OK, Brostrom A, de Beaulieu J-L, Gao C, González-Sampériz P, Granoszewski W, Hrynowiecka A, Kolaczek P, Kuneš P, Magri D, Malkiewicz M, Mighall T, Milner AM, Möller P, Nita M, Noryskiewicz B, Pidek IA, Reille M, Robertsson A-M, **Salonen JS**, Schläfli P, Schokker J, Scussolini P, Šeirienė V, Strahl J, Urban B, Winter H, Svenning J-C (2023) Substantial light woodland and open vegetation characterised the temperate forest biome before *Homo sapiens*. *Science Advances* 9:eadi9135.

Harrison SP, and 80 others including **Salonen S** (2022) The Reading Palaeofire database: an expanded global resource to document changes in fire regimes from sedimentary charcoal records. *Earth System Science Data* 14:1109–1124.

Katrantsiotis C, Noström E, Smittenberg RH, **Salonen JS**, Pliik A, Helmens K (2021) Seasonal variability in temperature trends and atmospheric circulation systems during the Eemian (Last Interglacial) based on n-alkanes hydrogen isotopes from Northern Finland. *Quaternary Science Reviews* 273:107250.

Salonen JS, Sánchez-Goñi MF, Renssen H, Pliik A (2021) Contrasting northern and southern European winter climate trends during the Last Interglacial. *Geology* 49:1220–1224.

Stivirins N, Belle S, Trasune L, Blaus A, **Salonen S** (2021) Food availability and temperature optima shaped functional composition of chironomid assemblages during the Late Glacial–Holocene transition in Northern Europe. *Quaternary Science Reviews* 266:107083.

Rijal DP, Heintzman PD, Lammers Y, Yoccoz NG, Lorberau KE, Pitelkova I, Goslar T, Murguzur FJA, **Salonen JS**, Helmens KF, Bakke J, Edwards ME, Alm T, Bråthen KA, Brown AG, Alsos IF (2021) Sedimentary ancient DNA shows terrestrial plant richness continuously increased over the Holocene in northern Fennoscandia. *Science Advances* 7:eabf9557.

Helmens KF, Katrantsiotis C, Kuosmanen N, Luoto TP, **Salonen JS**, Väiliranta M (2021) Prolonged interglacial warmth during the Last Glacial cycle in northern Europe. *Boreas* 50:331–350.

Sanchez Goñi MF, Fourcade T, **Salonen S**, Lesven J, Frigola J, Swingedouw D, Sierro FJ (2021) Moderate cooling and drying in NW Mediterranean lead by the strongest last glacial North American ice surges. *Geological Society of America Bulletin* 133:451–460.

Lahtinen M, Clinnick D, Mannerman K, **Salonen S**, Viranta S (2021) Excess protein enabled dog domestication during severe Ice Age winters. *Scientific Reports* 11:7.

Davis B, and 101 others including **Salonen JS** (2020) The Eurasian Modern Pollen Database (EMPD), Version 2. *Earth System Science Data* 12:2423–2445.

Kaufman D, and 92 others including **Salonen S** (2020) A global database of Holocene paleo-temperature records. *Scientific Data* 7:115.

Felde VA, Flantua SGA, Jenks CR, Benito BM, de Beaulieu J-L, Kuneš P, Magri D, Nalepka D, Risebrobakken B, ter Braak CJR, Allen JRM, Granoszewski W, Helmens K, Huntley B, Kondratienė O, Kalniņa L, Kupryjanowicz M, Malkiewicz M, Milner AM, Nita M, Noryskiewicz B, Pidek A, Reille M, **Salonen JS**, Šeirienė V, Winter H, Tzedakis PC, Birks HJB (2020) Compositional turnover and variation in Eemian pollen sequences in Europe. *Vegetation History and Archaeobotany* 1:101–109.

- Salonen JS**, Korpela M, Williams JW, Luoto M (2019) Machine-learning based reconstructions of primary and secondary climate variables from North American and European fossil pollen data. *Scientific Reports* 9:15805.
- Finné M, **Salonen S**, Frank N, Helmens KF, Schröder-Ritzrau A, Deininger M, Holzkämper S (2019) Last Interglacial climate in Northern Sweden – insights from a speleothem record. *Quaternary* 2:29.
- Reitalu T, Bjune AE, Blas A, Giesecke T, Helm A, Matthias I, Peglar SM, **Salonen JS**, Seppä H, Väli V, Birks HJB (2019) Patterns of pollen and plant richness across northern Europe. *Journal of Ecology* 107:1662–1677.
- Parducci L, Greve IA, Unneberg P, Pedersen MW, Han L, Lammers Y, **Salonen JS**, Väiliranta M, Slotte T, Wohlfarth B (2019) Shotgun ancient DNA, pollen and macrofossil analysis of Lateglacial lake sediments from southern Sweden. *Frontiers in Ecology and Evolution* 7:189.
- Plikk A, Engels S, Luoto T, Nazarova L, **Salonen S**, Helmens K (2019) Chironomid-based temperature reconstruction for the Eemian Interglacial (MIS 5e) at Sokli, northeast Finland. *Journal of Paleolimnology* 61:355–371.
- Salonen JS**, Helmens KF, Brendryen J, Kuosmanen N, Väiliranta M, Goring S, Korpela M, Kylander M, Philip A, Plikk A, Renssen H, Luoto M (2018) Abrupt high-latitude climate events and decoupled seasonal trends during the Eemian. *Nature Communications* 9:2851.
- Helmens KF, Katrantsiotis C, **Salonen JS**, Shala S, Bos JAA, Engels S, Kuosmanen N, Luoto TP, Väiliranta M, Luoto M, Ojala A, Risberg J, Weckström J (2018) Warm summers and rich biotic communities during N-Hemisphere deglaciation. *Global and Planetary Change* 167:61–73.
- Kylander ME, Plikk A, Rydberg J, Löwemark L, **Salonen JS**, Fernández-Fernández M, Helmens K (2018) New insights from XRF core scanning data into boreal lake ontogeny during the Eemian (Marine Isotope Stage 5e) at Sokli, northeast Finland. *Quaternary Research* 89:352–364.
- Shala S, Helmens KF, Luoto TP, **Salonen JS**, Väiliranta M, Weckström J (2017) Comparison of quantitative Holocene temperature reconstructions using multiple proxies from a northern boreal lake. *The Holocene* 27:1745–1755.
- Plikk A, Helmens KF, Fernández-Fernández M, Kylander M, Löwemark L, Risberg J, **Salonen JS**, Väiliranta M, Weckström J (2016) Development of an Eemian (MIS 5e) Interglacial paleolake at Sokli (N Finland) inferred using multiple proxies. *Palaeogeography, Palaeoclimatology, Palaeoecology* 464:11–26.
- Salonen JS**, Verster AJ, Engels S, Soinen J, Trachsel M, Luoto M (2016) Calibrating aquatic microfossil proxies with regression-tree ensembles: cross-validation with modern chironomid and diatom data. *The Holocene* 26:1040–1048.
- Salonen JS**, Saarinen J, Miettinen A, Hirvas H, Usoltseva M, Fortelius M, Sorsa M (2016) The northernmost discovery of a Miocene proboscoid bone in Europe. *Palaeogeography, Palaeoclimatology, Palaeoecology* 454:202–211.
- Goring S, **Salonen JS**, Luoto M, Williams J (2015) Non-analogues in paleoecological reconstruction: model behaviour and implications. In: Dy JG, Emile-Geay J, Lakshmanan V, Liu Y (Eds.), *Proceedings of the Fifth International Workshop on Climate Informatics: CI 2015*. ISBN: 978-0-9973548-0-5
- Helmens K, **Salonen JS**, Plikk A, Engels S, Väiliranta M, Kylander M, Brendryen J, Renssen H (2015) Major cooling intersecting peak Eemian Interglacial warmth in Northern Europe. *Quaternary Science Reviews* 122:293–299.
- Ronkainen T, Väiliranta M, McClymont E, Tuittila E-S, Biasi C, **Salonen JS**, Kaverin D, Fontana S (2015) A combined biogeochemical and paleobotanical approach to study permafrost environments and past dynamics. *Journal of Quaternary Science* 30:189–200.
- Väiliranta M, **Salonen JS**, Heikkilä M, Amon L, Helmens K, Klimaschewski A, Kuhry P, Kultti S, Poska A, Shala S, Veski S, Birks HH (2015) Plant macrofossil evidence for an early onset of the Holocene summer thermal maximum in northernmost Europe. *Nature Communications* 6:6809.
- Seppä H, Schurgers G, Miller PA, Bjune AE, Giesecke T, Kühl N, Renssen H, **Salonen JS** (2015) Trees tracking a warmer climate: the Holocene range shift of hazel (*Corylus avellana*) in northern Europe. *The Holocene* 25:53–63.
- Parducci L, Väiliranta M, **Salonen JS**, Ronkainen T, Matetovici I, Fontana SL, Eskola T, Sarala P, Andersen K, Suyama Y (2015) Proxy comparison in ancient peat sediments: pollen, macrofossil and plant DNA. *Philosophical Transactions of the Royal Society B* 370:20130382.
- Shala S, Helmens KF, Luoto TP, Väiliranta M, Weckström J, **Salonen JS**, Kuhry P (2014) Evaluating environmental drivers of Holocene changes in water chemistry and aquatic biota composition at Lake Loitsana, NE Finland. *Journal of Paleolimnology* 52:311–329.
- Salonen JS**, Luoto M, Alenius T, Heikkilä M, Seppä H, Telford RJ, Birks HJB (2014) Reconstructing Late-Quaternary climatic parameters of northern Europe from fossil pollen using boosted regression trees: comparison and synthesis with other quantitative reconstruction methods. *Quaternary Science Reviews* 88:69–81.
- Salonen JS**, Seppä H, Birks HJB (2013) The effect of calibration data set selection on quantitative palaeoclimatic reconstructions. *The Holocene* 23:1650–1654.
- Fang K, Morris J, **Salonen JS**, Miller PA, Renssen H, Sykes MT, Seppä H (2013) How robust are the Holocene treeline simulations? A model-data comparison in the European Arctic treeline region. *Journal of Quaternary Science* 28:595–604.

- Salonen JS**, Helmens KF, Seppä H, Birks HJB (2013) Pollen-based palaeoclimate reconstructions over long glacial–interglacial timescales: methodological tests based on the Holocene and MIS 5d–c deposits at Sokli, northern Finland. *Journal of Quaternary Science* 28:271–282.
- Salonen JS**, Seppä H, Luoto M, Bjune A, Birks HJB (2012) A North European pollen–climate calibration set: analysing the climate response of a biological proxy using novel regression tree methods. *Quaternary Science Reviews* 45:95–110.
- Salonen JS**, Ilvonen L, Seppä H, Holmström L, Telford R, Gaidamavicius A, Stancikaite M, Subetto D (2012) Comparing different calibration methods (WA/WA-PLS regression and Bayesian modelling) and different-sized calibration sets in pollen-based quantitative climate reconstruction. *The Holocene* 22:413–424.
- Jones VJ, Solovieva N, Self AE, McGowan S, Rosén P, **Salonen JS**, Seppä H, Väliranta M, Parrott E, Brooks SJ (2011) The influence of Holocene tree-line advance and retreat on an arctic lake ecosystem; a multi-proxy study from Kharine Lake, North Eastern European Russia. *Journal of Paleolimnology* 46:123–137.
- Salonen JS**, Seppä H, Jones VJ, Self A, Väliranta M, Heikkilä M, Kultti S, Yang H (2011) The Holocene thermal maximum and late-Holocene cooling in the tundra of NE European Russia. *Quaternary Research* 75:501–511.
- Väliranta M, Kaakinen A, Kuhry P, Kultti S, **Salonen JS**, Seppä H (2011) Scattered late-glacial and early-Holocene tree populations as dispersal nuclei for forest development in NE European Russia. *Journal of Biogeography* 38:922–932.

Monographs

- Salonen JS** (2012) *Quantitative climate reconstructions based on fossil pollen: novel approaches to calibration, validation, and spatial data analysis*. PhD dissertation. Department of Geosciences and Geography A 17, Unigrafia, Helsinki, 102 pp.

Books

- Salonen JS** (2021) *Viisi maailmanloppua: maapallon historia ja ihmiskunnan tulevaisuus* (in Finnish). Gaudeamus, Helsinki, 285 pp.

Chapters in books

- Salonen JS** (2021) Hyvä ja paha tieto menneestä ja tulevaisuudesta geologisen ajan näkökulmasta (in Finnish). In: Hetemäki I, Kuusisto A-K, Lähtenmäki M, Välvirronen E (eds.) *Hyvä ja paha tieto*, Gaudeamus, Helsinki, 283–284.

Magazine articles (non-reviewed)

- Salonen JS**, Kuosmanen N, Trasūne L, Weckström J (2022) Suomen muinaisia ilmastoja luotaamassa: retki Värriön tutkimusasemalle (”Probing Finland’s ancient climates: a trip to Värriö Research Station”, in Finnish with an English abstract). *Geologi* 74:188–194.
- Salonen JS** (2022) Muinaisilmastojen muistutukset (in Finnish). *Yliopisto* 1/2022:50–51.
- Salonen JS** (2021) IHME Helsingin nykytaideteos toi paleotsooisien alkumetsän ja modernin Amazonin tuoksut Kumpulaan. (”The IHME Helsinki modern art commission brought Paleozoic and modern-day forests to the Kumpula campus”, in Finnish with an English abstract). *Geologi* 73:146–148.
- Salonen JS** (2021) Lämpenee vai kylmenee – heikkeneekö Golf-virta? (in Finnish). *Natura* 3/2021:30–35.
- Paterson K, Maguire S, **Salonen JS**, Zalasiewicz J (2021) Taide kohtaa geologian: IHME Helsinki 2021 -teos tuo kaukaisen menneisyyden ja tulevaisuuden ensisyyksynä Helsinkiin. (”Art meets geology: the IHME Helsinki 2021 commission brings the distant past and future to Helsinki in the autumn”, in Finnish with an English online version). *Geologi* 73:66–71.
- Salonen JS** (2021) Tutkija: Näin ilmastonmuutos auttoi ihmistä kesyttämään suden koiraksi (in Finnish). *Suomen Luonto*. <http://www.suomenluonto.fi>
- Salonen JS** (2018) Neotoma – paleoekologinen tietokanta (in Finnish). *Geologi* 70:153–155.
- Salonen JS**, Helmens K (2018) Sokli varoittaa ilmastonmuutoksen seurauksista (”Sokli: a cautionary tale about consequences of climate change”, in Finnish with an English abstract). *Geologi* 70:124–133.
- Salonen JS** (2018) Tutkijat löysivät Lapista avaimen jääkautta edeltäneen lämpimän ilmaston dramaattisten vaiheiden selvittämiseen (in Finnish). *#Muutos-lehti*. <http://www.muutoslehti.fi>
- Salonen JS**, Saarinen J, Miettinen A, Hirvas H, Usoltseva M, Fortelius M, Simonsuuri-Sorsa M (2016) Pieni pala tertiääriä (”A small piece of the Tertiary”, in Finnish with an English abstract). *Geologi* 68:120–130.
- Salonen JS**, Helmens KF (2015) Suomen muinainen ilmasto heilahteli villisti (in Finnish). *Tieteessä tapahtuu* 33(5):3–8.
- Ojala AEK, Arppe L, Heikkilä M, Korhola A, Kosonen M, Luoto M, Middleton M, Nevalainen L, Rantala M, Ruppel MM, **Salonen JS**, Seppä H, Sutinen R, Väliranta M (2015) XIX INQUA 2015, Nagoya, Japani (”XIX INQUA 2015, Nagoya, Japan”, in Finnish with an English abstract). *Geologi* 67:102–106.
- Salonen JS** (2013) Atlantis – tarusta tieteeksi? (in Finnish). *Skeptikko* 3/2013:4–7.

Salonen JS (2013) Kirja-arvio: Nautittava annos ympäristögeologiaa ja vähän muutakin (in Finnish). *Geologi* 65:126–127.

Salonen JS, Kultti S (2012) Fossiilit kertovat ilmaston kehityksestä ("Fossils record the development of climate", in Finnish with an English abstract). *Geologi* 64:104–112.

Salonen JS (2008) Paikkatieto-ohjelmistoja geologiseen tutkimukseen ("GIS software for geological research", in Finnish with an English abstract). *Geologi* 60:185–189.

Blogs

"Syvä aika" ("Deep time", in Finnish), 2018–2019. <http://www.muutoslehti.fi/blogi/syva-aika/>

Miscellaneous activities

Scientific conferences

Author in 60+ presentations in scientific conferences

Consultations and advisory

2021: Zoan Helsinki, Scientific advisor to video art project about ice age environments

2020–2021: Scientific advisor to art project "To Burn, Forest, Fire" by Katie Paterson, commissioned by IHME Helsinki.

2017: Scientific advisor to a television documentary (YLE, Avara luonto, "Meri joka katosi").

Supervised students

2022–: Meri Mäkelä, PhD, University of Helsinki (co-supervisor)

2021–: Līva Trasūne, PhD, University of Helsinki (main supervisor)

2020–: Supervision of multiple BSc theses, University of Helsinki

Associations

2022–: Association of Finnish Nonfiction Writers (member)

2012–: Skepsis, the Finnish association of sceptics (member)

2005–: Geological Society of Finland (member; editorial secretary in 2013–2019)