I. Greetings!

Dear aeolian scientist, welcome to the December 2024 edition of the ISAR Newsletter. This is the fourth edition of the Newsletter-new-style, and so far, it has been very well received. The success of this medium is evident in the growing number of pages per newsletter, demonstrating its important role in keeping the community updated on news and events. 2024 has been a very interesting year in many aeolian aspects; snow in the Saudi Arabian deserts, Saharan dust on European glaciers, and even a hurricane in the North Sea.

A First for Saudi Arabia: November Snow in the Desert
copyright:www.timesofindia.indiatimes.com

During the Easter weekend of 2024, Saharan dust covered many European glaciers
copyright: www.meteonews.ch

Some exciting stuff happened within our community as well; we had a very successful and well-attended virtuaeolian seminar series with no less than N=6 talks this year and more to come in the new one! The ISAR website also received a significant overhaul, led by our youngest board member, Alex, with supervision from James and Maddy. Additionally, our membership organization is now much more streamlined.

And there's more! This year, we celebrate the proud recipient of the **2024 Distinguished Career Award**, many engaging sessions during international meetings, and a host of new activities and events. Please read ahead for all the details!

Jan-Berend Stuut (President)

Please feel free to reach out with any questions or community updates to share in the upcoming newsletters. You can reach the ISAR board at admin@aeolianresearch.com. Also, stop by our website for more info: https://www.aeolianresearch.com

II. Features

Congratulations to Prof Tom Gill, ISAR Distinguished Career Awardee 2024

Tom Gill at Lordsburg Playa

A Biographical Sketch of Tom Gill

By Jeffrey A. Lee, Texas Tech University

Thomas E. Gill was born in 1961 and grew up in Walnut Creek, California, near San Francisco. Both of his parents were artists and trips for his father's hobby of landscape painting led Tom to a love of geomorphology starting early in childhood. A self-proclaimed science nerd, he spent much time in the local library trying to understand the scenery he saw.

At age two, Tom developed rheumatoid arthritis, which kept him in a wheelchair for most of his childhood. Early in college, he improved enough to walk short distances, which has been the case for most of his adult life.

He was an Atmospheric Science major at University of California, Davis, but had an equal love of Geology and Physical Geography, earning minors in both subjects. At the time, geology was not seen as a good fit for someone with a physical disability, but Geology Professor Eldridge Moores saw Tom's intellectual potential and encouraged him to follow his passion. Despite his limited mobility, he has conducted extensive field research projects during his career.

For his PhD, also at UC Davis, Tom combined his love of all aspects of solid and atmospheric Earth Science and joined the lab of Professor Tom Cahill to study sand and dust storms at Mono Lake, California and this work was expanded to include Owens Lake. Thus began Tom's career in aeolian research. The Owen's Lake research found him working closely with the aeolian pioneer Dale Gillette. Both playa lakes are extensively affected by water diversions for Los Angeles, which gave Tom's research strong political and economic dimensions. In fact, his work was temporarily halted due to a lawsuit where, as a graduate student, he had to turn over all his research data and findings and testify in court.

During and after his PhD, Tom conducted air quality (mostly dust-related) research as a scientist at the Crocker Nuclear Lab at UC Davis, which was then directed by Cahill. This was the time when PM_{10} and $PM_{2.5}$ were just being widely seen as human health threats and Owens Lake was an extreme emitter of both. His time in Davis was followed by nine years in Lubbock, Texas, first working for the US Department of Agriculture under Ted Zobeck, then Texas Tech University. He moved to University of Texas El Paso in 2004, where he remains as Professor with a joint appointment in Geological Sciences and Environmental Science and Engineering.

At UTEP, his courses, include 'Earth Science', 'Weather and Climate', 'Aeolian Processes', 'Arid Lands', and 'Art and the Environment.' He advised 22 MS and PhD students, with more ongoing.

Space limitations preclude me from delving into Tom's passions for music, human rights, and humor. And, of course, his hard work as an advocate for people with disabilities in the Sciences. Not to mention is skills as a bird and butterfly watcher.

Tom is a sought-after scientist to collaborate on research projects. You can be sure that if his name is on a paper, he spent considerable effort on both the science and the writing. His peer reviewed publications include a total of 271 co-authors. (That's 271 individuals with those on multiple papers counted as one.) The old slogan for the BASF company can be modified: Tom Gill doesn't lead the research project. Tom Gill makes the research project you lead better. Only some of his research areas are mentioned here.

His most cited publications are from his work in a team developing a global assessment of major dust source regions. The best known of these studies, with nearly 3300 citations, is: Prospero, Joseph M., Paul Ginoux, Omar Torres, Sharon E. Nicholson, and Thomas E. Gill, 2002.

Environmental characterization of global sources of atmospheric soil dust identified with the NIMBUS-7 TOMS absorbing aerosol product. *Reviews of Geophysics* 40: 2-01 to 2-31 (doi: 10.1029/2000RG000095).

Tom probably is best known for his work on aeolian processes acting on playa surfaces, represented here by: Gill, Thomas E., 1996. Eolian sediments generated by anthropogenic disturbance of playas: human impact on the geomorphic system and geomorphic impacts on the human system. *Geomorphology*, 17: 207-228. https://doi.org/10.1016/0169-555X(95)00104-D

His work on aeolian health hazards, especially Valley Fever, has arguably been his major research focus in the past decade and is shown in this article: Tong, Daniel Q., Julian XL Wang, Thomas E. Gill, Hang Lei, and Binyu Wang, 2017. Intensified dust storm activity and Valley fever infection in the southwestern United States. *Geophysical Research Letters* 44(9): 4304-4312. https://doi.org/10.1002/2017GL073524

Research on the global patterns of dust source regions is complemented by his work focusing on dust sources in the Great Plains and Southwest of the United States and northern Mexico. A good example is: Kandakji, Tarek, Thomas E. Gill and Jeffrey A. Lee, 2020. Identifying and characterizing dust point sources in the southwestern United States using remote sensing and GIS. *Geomorphology* 353:107019. https://doi.org/10.1016/j.geomorph.2019.107019

Finally, an historical look at the causes of dust storms in the Dust Bowl of the 1930s resulted in: Lee, Jeffrey A., and Thomas E. Gill, 2015. Multiple causes of wind erosion in the Dust Bowl. *Aeolian Research* 19(A):15-36**.** https://doi.org/10.1016/j.aeolia.2015.09.002

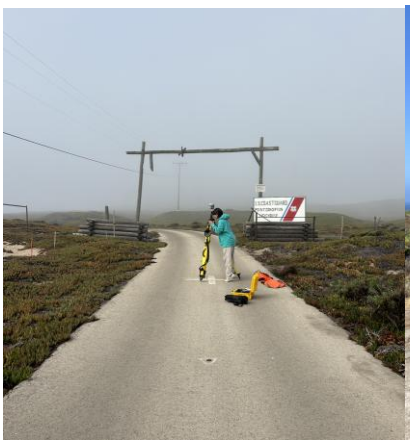
Congratulations Tom!

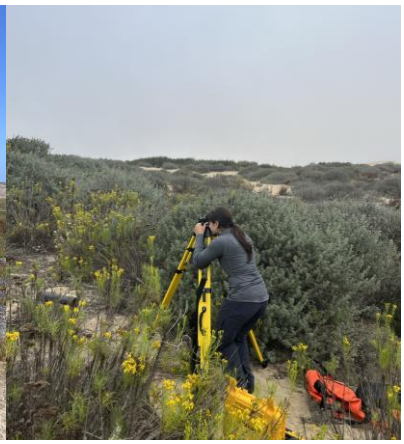
Thanks for all the nomination packages we received. We will announce the 2025 awardee in the coming months. The 2026 nomination window will open summer-autumn 2025 and will include a number of new awards including early career, mid-career and paper awards in addition to the Distinguished Career Award.

Student Features

Phoebe Mennis (UCSB)
phoebemennis@ucsb.edu

I am an undergraduate student in my final year at University of California, Santa Barbara (UCSB) majoring in physical geography and environmental studies. My interest in coastal geomorphology and remote sensing began during a field course taught by Dr. Walker and Madison Heffentrager (TA), where we explored a range of restoration sites and dune systems along the California coast. Since this past summer, I have had the privilege of working in Dr. Ian Walker lab, primarily contributing to two projects.





The first project has been focused on assisting Madison Heffentrager, a PhD student of Dr. Walker's, on her research of the headland bypass system at the Jack and Laura Dangermond Preserve and the dune systems at Oceano Dunes National Park. I have helped collect UAS drone data, analyzed imagery, created wind and wave rose plots, and conducted digital shoreline analyses. This project has allowed me to gain hands-on experience with the Wingtra drone system, and advance my skills in remote sensing and ArcGIS Pro.

The second project, with Maddy Kelley (USGS) and Zach Hilgendorf (UW-Eau Claire), focuses on quantifying differences in sand transport dynamics and wind turbulence in coastal dune systems based on varying vegetation densities. My role has included filtering some of the raw data, tracking particles in FIJI, and using Particle Imaging Velocimetry (PIV) to compute the downstream (u) and vertical (w) components of fluid motions.

These experiences have advanced my technical skills, deepened my interest in aeolian research, and connected me to an amazing community of researchers and students. I am excited to present preliminary results at AGU in December. After graduating, I plan to pursue a Master's degree, and a career in field research and remote sensing. Outside of work, I enjoy climbing, camping, playing music, and crocheting!

Daniel Bellamy (UMontreal)

daniel.bellamy@umontreal.ca

PhD student measuring and modelling mineral dust emissions from proglacial valleys in western Canada motivated in pursuing a post-doc.

Hello to all ISAR members, some of which I was fortunate enough to meet at ICAR 2023.

I'm Daniel Bellamy, a PhD candidate currently at the Université de Montréal (Canada) with J. King, working to strengthen understanding of dust emission dynamics from proglacial valleys in western Canada. I'm going to highlight/shamelessly plug some results from this current project below.

We don't have any estimates of emission activity or total dust loading from proglacial regions of western Canada and Alaska, despite: frequent observation by local residents; episodic-identification in remote sensing; and local dust prevalence at high altitudes across the icefields. My current work uses in-situ installations and high-resolution modelling to diagnose complex terrain meteorology, constrain erodibility across active glaciofluvial deposits, and simulate emissions within proglacial valleys across SW Yukon.

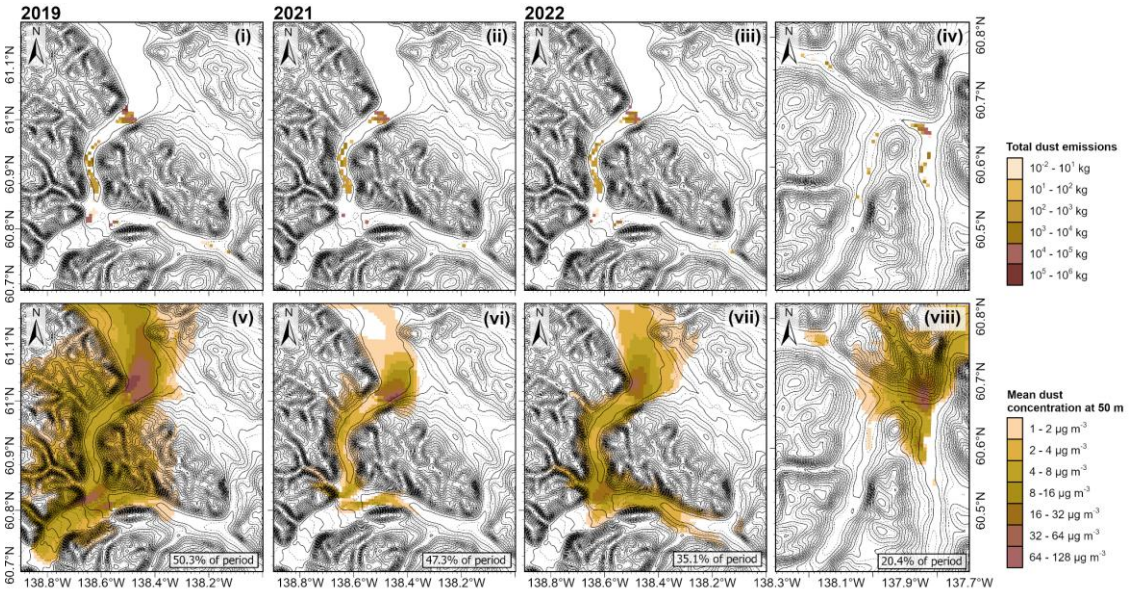


Figure. (top row) Summed dust emissions (kg) across simulation periods in May 2019 (i) June-July 2021 (ii) Sep 2022 (iii-iv). (bottom row) mean dust concentration at 50 m during active emission periods (non-zero emissions anywhere within domain) as above. Percentage of period with active emissions indicated in figure.

So far we've successfully characterised the meteorological forcing mechanisms of strong winds within the regions complex terrain (Bellamy et al. under review) and diagnosed erodibility dynamics for these glaciofluvial dynamics (seasonal meltwater cover, annual snow cover dynamics) (Bellamy et al. in prep). Meteorological and land-surface insights have been leveraged to implement WRF-CHEM at high-resolution with time-variant erodibility conditions to simulate dust emissions from several proglacial valleys in the region (see figure), which will soon provide first-order estimates of emission loading and pathways. Future work I'm hopeful to accomplish during a future post-doc include the production of annual dust emission estimates for SE St. Elias Mountains, and investigation of nocturnal emission activity due to thermally-driven winds.

Thank you to the ISAR committee and everyone in this field who I've been able to learn from over the past few years!

III. ICAR 2026

Dates Announced!

*We are pleased to confirm that ICAR XII will take place in Swakopmund, Namibia, from **13th-17th July 2026**. Scientific sessions are planned to take place in the Strand Hotel and, in association with the Gobabeb Namib Research Institute, the conference will include a mid-week field visit to the stunning dunes of the hyper-arid Namib Desert. Look out for news and announcements in the new year for registering your interest.*

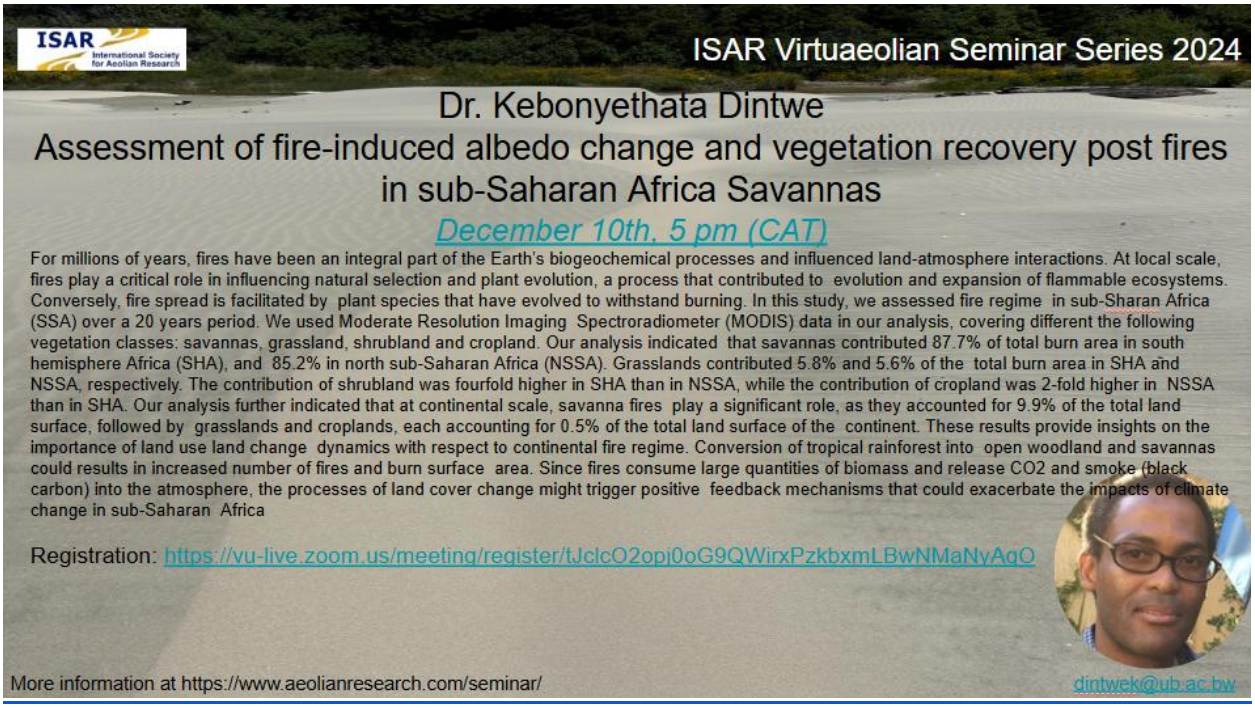
Giles Wiggs

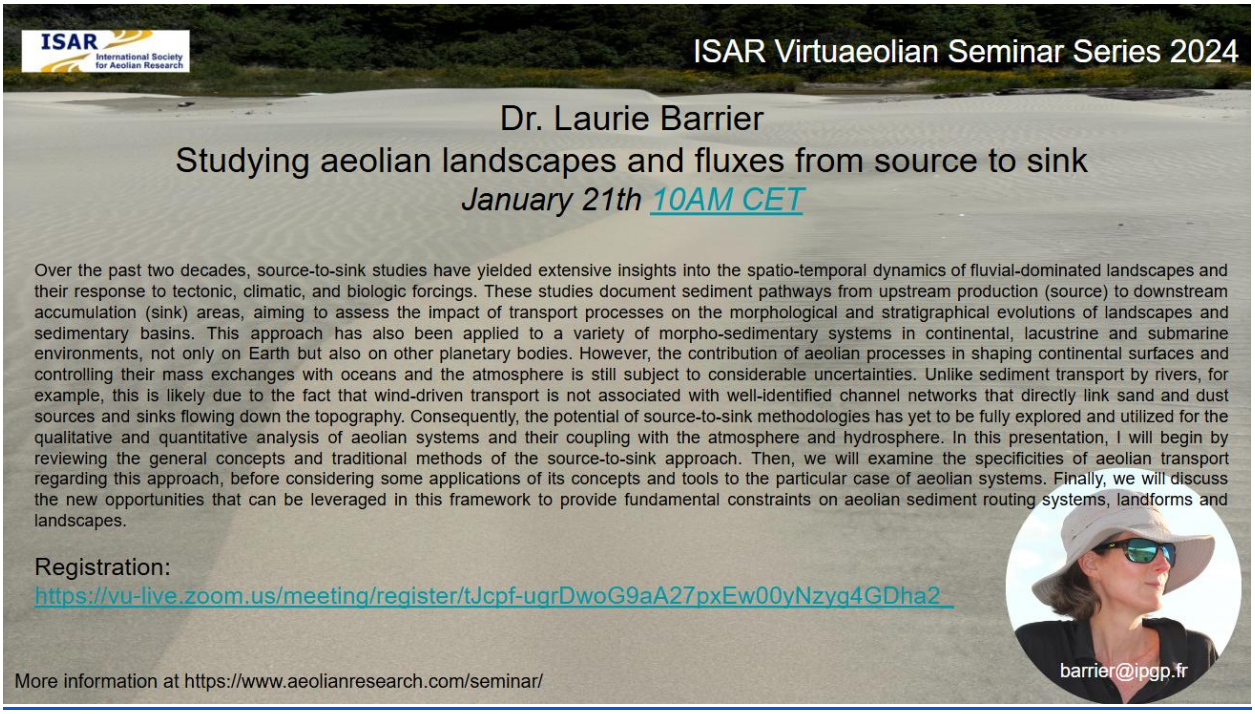
On behalf of the Organising Committee

IV. Virtuaeolian Seminar Series

So far the Virtuaeolian Seminar Series has had a relatively good attendance and we hope this continues to grow. We're aware attendance isn't always possible with the various time zones of our global community of researchers, but we are trying to keep timing as fair as possible. We encourage you to join us live online for active participation and to show your support for ISAR and the speakers, but we also would like to draw your attention to the ISAR website page which includes links to all previously recorded talks: https://www.aeolianresearch.com/seminar/. This archive is a useful resource for those who can't make the scheduled live talk but, perhaps more importantly, also for students or researchers new to the topics who want to hear exciting aeolian research from world-leading experts.

In your last two talks for this series, we will hear from Professor Kebonye Dintwe from University of Botswana who will present on the roles of rain, vegetation, and fire in the Kalahari Desert and Associate Professor Laurie Barrier from the Institut de Physique du Globe de Paris and Univ. Paris Cité on aeolian source-to-sink dynamics. If you have suggestions for future topics or speakers, please send them through to Philippe Claudin (claudin@pmmh.espci.fr) - we'd be grateful to hear from you.





Thank you to all the attendees and viewers of the series so far, and a very special thanks to our speakers for taking the time to prepare and present such interesting talks; it is very much appreciated. We look forward to seeing you all at the Virtuaeolian Seminar Series in the future!

Philippe Claudin, Maddy Kelley, Jan-Berend Stuut, and Andrew Gunn

V. Community Updates

A. The Sand Dune and Shingle Network

The Sand Dune and Shingle Network based in Liverpool Hope University are hosting 'New Horizons: Pioneering Research in Dunes and Shingle', a free half-day online conference on 22nd January 2025. This event is dedicated to highlighting research from PhD and early-career researchers exploring coastal sand dunes, machair, and shingle beaches. The conference is open to all attendees—whether you're a student, researcher, policymaker, you're welcome to join.

Conference Registration: https://lnkd.in/dSpAABTJ
Abstract Submission : https://lnkd.in/dG_jc4p4

Abstract submission closes midnight on Monday 16th December 2024 (GMT).

Thomas Smyth

B. 7th PAGES Open Science Meeting

The 7th PAGES Open Science Meeting will be held in Shanghai in 2025, with an abstract submission deadline of December 1, 2024.https://www.pages2025.org.cn/

If you have interests in aeolian/eolian processes in the dryland realm, please consider submitting you abstract to "Session 17: Eolian Processes and Landscape Dynamics in Drylands" https://www.pages2025.org.cn/Data/List/Sessions (scroll down to #17).

Peng Liang, Andrew Gunn, Yue Li and Xiaokang Liu

C. EGU 2025 - Two sessions

Aeolian Processes and Landforms

We would like to highlight session GM6.3 Aeolian Processes and Landforms for presenting your latest planetary aeolian research at the upcoming EGU 2025 meeting in Vienna. We are excited to announce a solicited presentation by Dr. Chloe Daudon (Caltech, UC Santa Barbara) on her recent work on barchan dunes and wind.

Aeolian processes act on planetary surfaces throughout the Solar System, yielding similar landforms and patterns across a wide range of spatial scales despite differences in atmospheric and surface properties. They are typically associated with the movement of sediments driven by an atmospheric flow but can also be controlled by other modes of matter transport such as ice sublimation. The combination of terrestrial and extra-terrestrial experiments and observations, as well as analogue studies, provides the opportunities as well as challenges for improving our fundamental theories and numerical models for better understanding of these aeolian environments. Innovations in instrumentation and experimental techniques continue to yield novel insights on Earth, while space missions and remote probes constantly deliver new and surprising evidence from aeolian environments on other planetary bodies. This session welcomes research on all aspects of aeolian processes and landforms on planetary surfaces, employing a variety of techniques, including, but not limited to, short- and long-term field

experiments, laboratory experiments, numerical simulations, and remote sensing of aeolian landform features.

Conveners: Pei Zhang, David A. Vaz, Sabrina Carpy, Andreas Baas

Aeolian dust - initiator, player and recorder of environmental change

We would like to recommend joining interdivision session CL4.14, which is co-organised as AS3/BG1/CR5/GM6, and which will be the 22nd edition of this dust session. We are excited to announce our solicited speaker Dr Patricia Castellanos (NASA), who will be presenting her work on “mineral dust optical properties for remote sensing and global modelling”.

Like in previous years, this session will be in the shape of a PICO, meaning that all presenters will advertise their work during the two-minute-madness and then personally lead you through their presentation at the screen.

We especially encourage the submission of papers that integrate different disciplines and/or address the modelling of past, present, and future climates.

Conveners: Claire Ryder, Clarissa Baldo, Martine Klose & Jan-Berend Stuut

EGU 2025 will take place in Vienna, Austria, 27 April - 2 May.
Abstract submission deadline is 15 January, 2025.

D. 8th International Planetary Dunes Workshop

The 8th International Planetary Dunes Workshop is scheduled for May 19–22, 2025, in Alghero, Sardinia, Italy. The purpose of this workshop is to provide a forum for discussion and exchange of new ideas and approaches to the investigation of aeolian processes that form and maintain dune fields on Earth, underwater, and on other planetary bodies within the solar system.

The objectives of the proposed Planetary Dunes workshop, which follows previous workshops with growing attendance over the past decade, include the following:

- Bringing together terrestrial and planetary aeolian scientists from a range of specialties (e.g., remote sensing, field study, computer modeling, and laboratory experimentation)
- Discussing and exploring the observations and theories of dunes and dune formation throughout the solar system
- Creating a research synergy between terrestrial analog studies, remote sensing, computer simulations, and laboratory experiments
- Exposing and expanding undergraduate and graduate students' understanding of planetary aeolian processes
- Determining high-priority science that can only be achieved with in situ measurements
- Developing a goals, objectives, and investigations document for the planetary aeolian community

To be added to the mailing list to receive additional information about this workshop, submit an indication of interest:https://www.hou.usra.edu/meeting_portal/iofi/?mtg=dunes2025

E. AGU 2024 Session: Dust in a Changing Climate: from Small-Scale Insights to Large-Scale Understanding (A073)

The atmospheric mineral dust cycle is an integral part of the evolving Earth system. Emitted and deposited dust particles affect physical, chemical, and bio-geological processes that produce a wide range of complex effects on atmospheric composition, hydrological cycle, climate, and ecosystems. The purpose of the session is to showcase advances in understanding dust physical and chemical properties and its role in the Earth system. The session invites laboratory, remote sensing, and modelling studies of dust properties, dust source regions, high latitude dust, dust interactions with clouds, radiation, precipitation, atmospheric circulation, the cryosphere, and the biosphere, as well as observational and modeling insights into climate feedbacks and the variability of dust across spatiotemporal scales, dust impacts on air quality, and modeling studies of the dust cycle and its interactions with other Earth system cycles. Papers reporting analysis of the NASA Earth Surface Mineral Dust Source Investigation (EMIT) data are strongly encouraged.

Conveners: Olga Kalashnikova, Chun Zhao, Martina Klose, Zhiyuan Hu

F. AGU 2024 Session: Aeolian Processes on Earth and Other Planetary Bodies

Past and present aeolian processes shape landscapes throughout our Solar System: from dust devils and aeolian sedimentary rock strata on Mars to windblown bedforms on Titan and Pluto. Earth observations, experiments, and theories have provided a basis for assessing and predicting aeolian processes on other bodies. However, integrating Earth and planetary discoveries is essential to interpret aeolian processes across the range of planetary atmospheres and landscapes. Existing models are challenged by rare but valuable planetary datasets, providing new understanding of fundamental processes. This session welcomes presentations on work that increases our understanding of modern and ancient aeolian processes on Earth and across our Solar System. Submissions on integrating planetary and terrestrial knowledge, or exploring new ideas and theories, instruments, and methodologies are especially encouraged. The session will consist of oral and poster presentations. Conveners: Claire Newman (Aeolis Research), Sarah Trimble (US Naval Research Lab), Chloe Daudon (Caltech), George McDonald (Aeolis Research, Portland State University), and M. Colin Marvin (Stanford University).

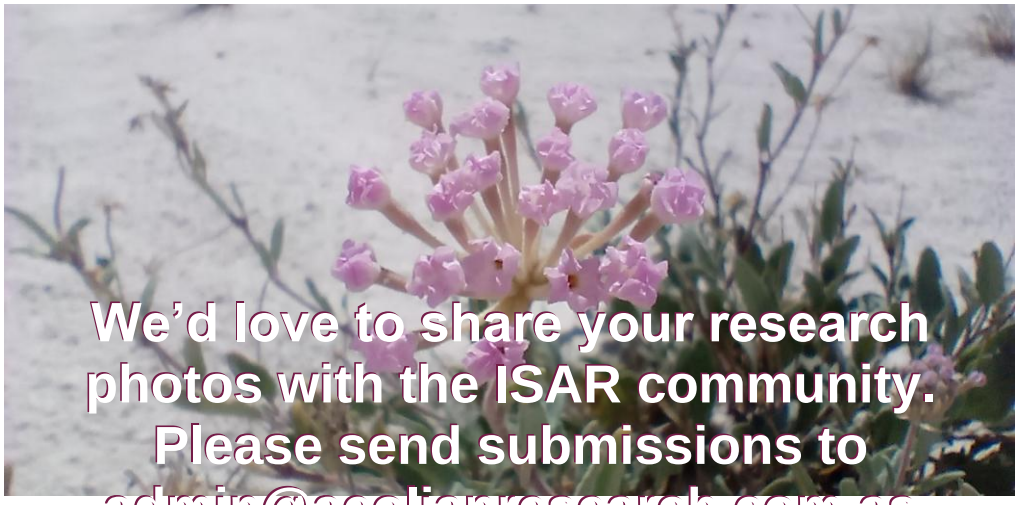
Sarah Trimble (US Naval Research Lab)

G. Job Opportunity!

We have a Physical Science Technician opening at Grades GS 7 – 9 at the USDA-ARS Jornada Experimental Range in Las Cruces, NM. The position will be part of the US/Canadian National Wind Erosion Research Network team. Duties include managing acquisition, installation and maintenance of meteorological and dust monitoring sensors across the network, troubleshooting communications issues, running data quality assurance and quality control processes, and ensuring that sites are supported in producing standardized, long-term monitoring datasets. The position will also maintain eddy covariance towers in support of complementary carbon cycling projects. It is expected that the position will spend considerable time in the field, including travel to network sites.

https://www.usajobs.gov/job/819723900 (closes Dec 3, 2024)
The position is open to US citizens. Qualified applicants will have a background in Geography, Meteorology, Earth Science, Engineering, Biology, or related field.
Please distribute to anyone you think would be a suitable candidate.
For questions about the position, please contact Nicholas Webb (nick.webb@usda.gov)

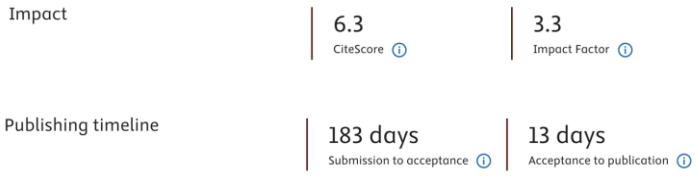
Research Photos Submissions



Caption: Strong winds on Texel show all the possible ways of aeolian transport (and ruin my camera's lens....) **Credits**: Oeki Verhage

Caption: Ripples and rapids! (Top) Lead scientist, Joel Sankey, looks across the Colorado River at one of over 50 river-sourced aeolian dune fields within the Grand Canyon, USA. Joel, Joshua Caster, Madeline Kelly, Helen Fairley, and Lauren Tango from the US Geological Survey's Grand Canyon Monitoring and Research Center were on-site collecting data on sediment characteristics, surface topography, land cover, wind and weather to better understand and model how changes in river flow and sediment regimes might affect fluvial-aeolian interactions. **(Bottom left)** Madeline and Joel collect sediment samples along transects extending from the active river channel into an adjacent aeolian dune. **(Bottom right; left to right)** Joshua, Nathaniel Bransky, and Lauren visit one of six remote weather stations used to assess variability in meteorological conditions within the Grand Canyon's Colorado River corridor.

VI. Journal Highlights/Updates



Here are some of the latest journal publications. Thank you to the authors for these wonderful contributions!

1. **Carcinogenic and non-carcinogenic health risks of heavy metals in windborne sediments from a residential area (Case study: Tabas, Iran)**
   Hojat Emami et al., December 2024
2. **Regional differences in the grain size characteristics of surface sediments from typical barchan dunes in arid zones**
   Ning Jiang & Hong Cheng, December 2024
3. **Automatic identification of saltating tracks driven by strong wind in high-speed video using multiple statistical quantities of instant particle velocity**
   Hongji Zhou et al., December 2024
4. **Characterizing variability in geochemistry and mineralogy of western US dust sources**
   Abby L. Mangum et al., December 2024
5. **Transport and deposition of microplastics and microrubbers during a dust storm (Sarakhs, northeast Iran)**
   Sajjad Abbasi et al., December 2024
6. **Aeolian sand cover on a granite peninsula (Hammeren, Bornholm, Baltic Sea) formed in three episodes during the past 11,600 years**
   Lars B. Clemmensen et al., December 2024
7. **Speculation on an early Pleistocene origin of the Parker dunes of southwest Arizona, USA**
   Yeong Bae Seong et al., December 2024
8. **An evaluation of different approaches for estimating shear velocity in aeolian research studies**
   Pei Zhang et al., December 2024

VII. Closing Remarks

As we wrap up the final edition of the Society of Aeolian Research Newsletter for 2024, it's a perfect time to reflect on what we've accomplished. This year marked the first time we've consistently published our revamped newsletter, and it's been wonderful to see the society's work and achievements showcased in this way. Thank you to everyone who contributed articles, updates, and ideas—it's truly been a team effort. The newsletter has become a valuable way to stay connected, share research, and celebrate the latest developments across the field of aeolian science.

As we look ahead to 2025, we'd love to hear your thoughts on how we can continue to improve. Whether you have ideas for content or suggestions for involving more members, your input will help shape the future of the newsletter. Please don't hesitate to contact us with any questions or suggestions at admin@aeolianresearch.com.

Thank you again for your support, and here's to another successful—and windy—year in 2025! Wishing you a wonderful holiday season and a happy New Year!

Cheers,
Teresa and Maddy
On behalf of the ISAR Board of Directors and Board Members