



PRESS ROUNDTABLE: **Health of mountain water towers around the world**

Thursday, 17 December
11:00 am US Eastern Time

AGU FALL
MEETING

SHAPING
THE FUTURE
OF SCIENCE

PANELISTS

- **Tenzing Chogyal Sherpa**, International Centre for Integrated Mountain Development
- **Lewis Collins**, *One Earth*
- **Paul Mayewski**, Climate Change Institute, University of Maine
- **Imogen Napper**, University of Plymouth
- **Baker Perry**, Appalachian State University

INFORMATION FOR REPORTERS

- Reporters: Please ask your questions directly to the panelists
- Slides from this presentation are available in the Fall Meeting Media Center: <https://www.agu.org/Fall-Meeting/Pages/Attend/Media-Center>
- This event will NOT be recorded
- Questions and technical issues: Email news@agu.org

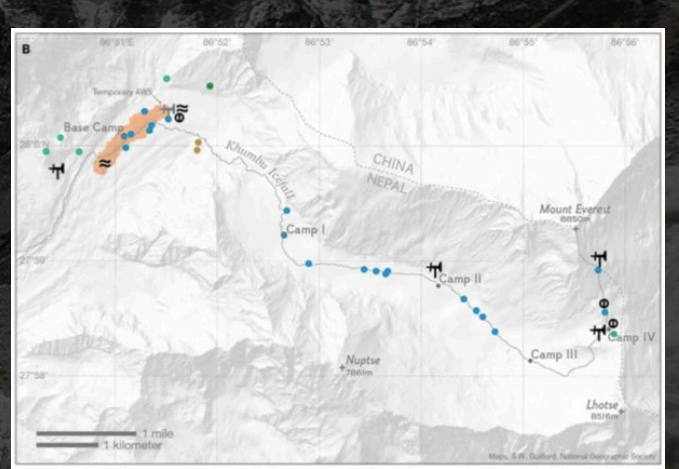
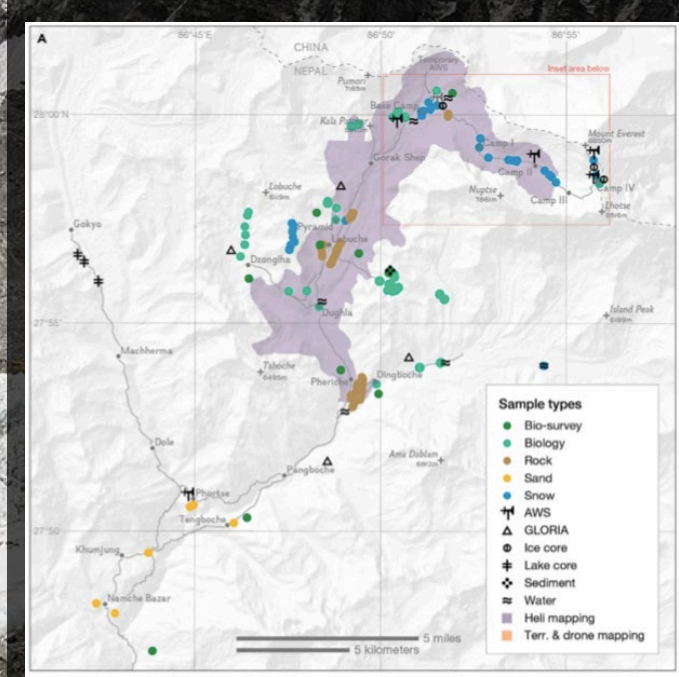


2019
NATIONAL GEOGRAPHIC
AND ROLEX
PERPETUAL PLANET
EVEREST EXPEDITION

ONE EARTH SPECIAL ISSUE



G R O U N D B R E A K I N G I N T E R D I S C I P L I N A R Y R E S E A R C H



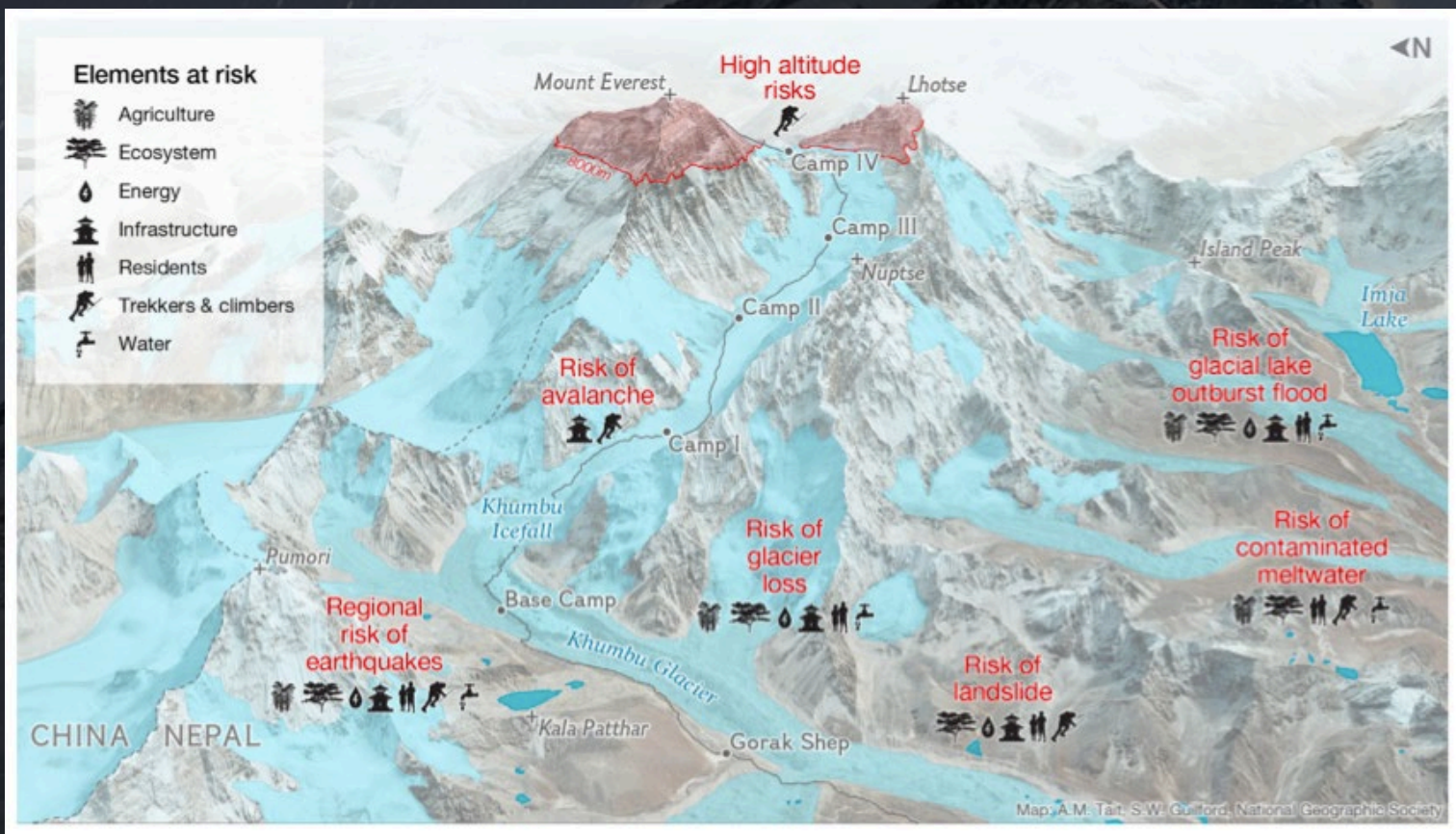
CellPress **One Earth**

Backstory
Behind the Scenes of a Comprehensive Scientific Expedition to Mt. Everest

Sandra Ekin,¹ Peto Athans,² Paul Mayewski,³ Jiban Ghimire,⁴ Aurora C. Elmore,¹ and Valerie Gray¹

Between April and June 2019, the National Geographic and Rolex Perpetual Planet Everest Expedition—ten research teams composed of 34 international and Nepali scientists—journeyed to the top of the world's tallest mountain in pursuit of new knowledge of these vulnerable and dynamic systems. This is our story.

G R O U N D B R E A K I N G I N T E R D I S C I P L I N A R Y R E S E A R C H



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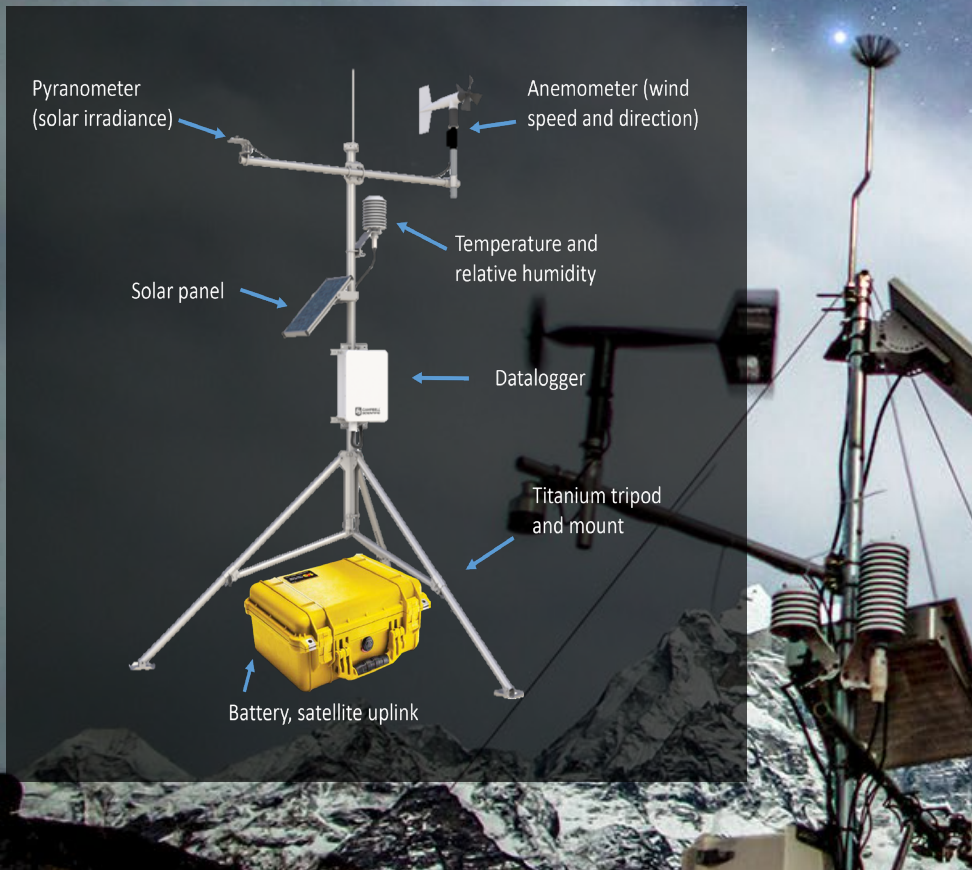
Gold Standard
for the Global Goals
1 ton of
CO₂ offset

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Primer
**An Overview of Physical Risks
in the Mt. Everest Region**

Kimberly R. Miner,^{1,2} Paul A. Mayewski,¹ Sanju K. Baidya,¹⁰ Kenneth Broad,^{3,11,12} Heather Clifford,^{1,2} Aurora Elmore,⁹ Ananta P. Gajurel,² Bibek Giri,² Sam Guilford,³ Mary Hubbard,² Corey Jaskolski,¹⁰ Heather Koldewey,² Wei Li,¹² Tom Matthews,⁴ Imogen Napper,⁶ L. Baker Perry,² Matusz Potocki,^{1,4} John C. Prisco,^{1,4} Alex Tait,² Richard Thompson,⁶ and Subash Tuladhar¹⁰

GROUND BREAKING INTERDISCIPLINARY RESEARCH



One Earth Article

Precipitation Characteristics and Moisture Source Regions on Mt. Everest in the Khumbu, Nepal

Graphical Abstract

Authors
L. Baker Perry, Tom Matthews, Heather Guy, ..., Anton Seimon, Ananta Gajurel, Paul A. Mayewski

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In Brief
Precipitation is critical to the water towers of the Hindu Kush-Himalaya-Karakoram region, exerting an important control on glacier mass balance and the water resources for 1.65 billion people. Here, we investigate precipitation characteristics and moisture sources in Nepal's Khumbu region. Our findings demonstrate that the northern Bay of Bengal is an important moisture source during the monsoon period (June to August) and that westerly trajectories over land predominate for precipitation events during the post-monsoon, winter, and pre-monsoon seasons.

Highlights

- Specific humidity and freezing level height have increased since 1981
- Bulk of precipitation falls during monsoon and at night
- Westerly trajectories predominate during post-monsoon, winter, and pre-monsoon
- Northern Bay of Bengal is an important moisture source during the monsoon period

Perry et al., 2020, *One Earth* 2, 1–4
November 20, 2020 © 2020 The Author(s). Published by Elsevier Inc.
<https://doi.org/10.1016/j.oneear.2020.10.011>

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iScience Article

Into Thick(er) Air? Oxygen Availability at Humans' Physiological Frontier on Mount Everest

Weather controls O₂ availability on Mt. Everest by affecting air pressure

Virtual elevation increases (Mt. Everest summit feels higher) vs **Virtual elevation decreases** (Mt. Everest summit feels lower)

1979-2019 Reconstruction

- 9,387 m - highest virtual elevation (land-based)
- 8,550 m (actual elevation)
- 8,201 m - lowest virtual elevation (land-based)
- 8,649 m - lowest virtual elevation (air-based)

Warming (climate change) means Mt. Everest summit may feel lower

Authors
Tom Matthews, L. Baker Perry, Timothy F. Lane, ..., Ananta Gajurel, Marusz Potocki, Paul A. Mayewski

10.1016/j.isci.2020.101122
Matthews et al., 2020
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https://doi.org/10.1016/j.isci.2020.101122

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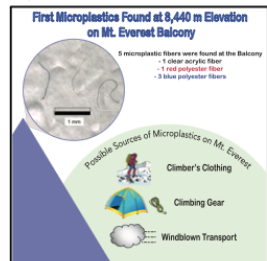
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One Earth

Article

Reaching New Heights in Plastic Pollution—Preliminary Findings of Microplastics on Mount Everest

Graphical Abstract



Authors

Imogen E. Napper, Bede F.R. Davies, Heather Clifford, ..., Aurora C. Elmore, Ananta P. Gajurel, Richard C. Thompson
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In Brief

An analysis of snow and stream water on Mt. Everest up to 8,440 m a.s.l. found microplastics (<5 mm) that were more concentrated near high human presence. Most of these microplastics were polyester fibers, likely to come from clothing and equipment. Exploration of extreme, remote environments requires appropriate stewardship, including progressing technological advances in gear design and minimising specific sources of plastic pollution.

Highlights

- Microplastics were found in snow and stream water samples on Mt. Everest
- The highest microplastics were discovered in a sample from 8,440 m a.s.l.
- Most microplastics were polyester fibers, likely from clothing and equipment
- Technological advances could minimize microplastic pollution from exploration

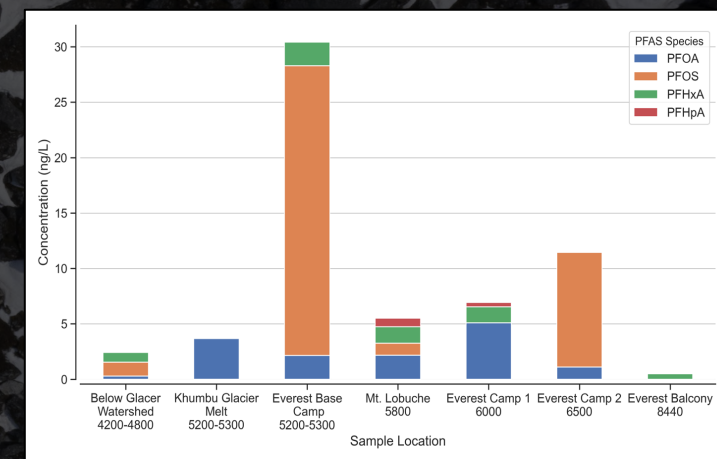
Napper et al., 2020, One Earth 2, 1–10
November 20, 2020 © 2020 Published by Elsevier Inc.
<https://doi.org/10.1016/j.oneear.2020.10.026>

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DEPOSITION OF PFAS 'FOREVER CHEMICALS' ON MT. EVEREST

(MINER ET AL., SCIENCE OF THE TOTAL ENVIRONMENT, IN PRESS)



VOICES: IMPORTANCE OF CLIMATE CHANGE IN THE KHUMBU REGION



T H A N K Y O U



NATIONAL
GEOGRAPHIC



ROLEX

COMMITTED TO A PERPETUAL PLANET

Y 2017

Y 2018

Y 2019

Y 2020

Y2021

UP NEXT

Powering a renewable
future through lithium
extraction from
unconventional sources

Thursday, 17 December
1:00 pm US Eastern Time

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