

CONTENTS

19 September 2019 / Vol 573 / Issue No 7774

THIS WEEK

EDITORIALS

309 CLIMATE CHANGE

Act now to avert a climate crisis

Why *Nature* has joined the Covering Climate Now initiative

310 COMPUTING

Feynman's quest

Stochastic computer promises an energy-efficient way to handle big data

310 ENVIRONMENT

Ending drought

Why is drought an understudied field?

WORLD VIEW

311 Why I welcome a climate emergency

Paul Gilding

Declaration should help to mobilize necessary technology and policy

RESEARCH HIGHLIGHTS

312 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Stellar clock / Green catalyst / Bacterial masquerade / Titan's lakes / Cellular volume control / Tiny turtle tracks / Toe-painting control

SEVEN DAYS

314 THE NEWS IN BRIEF

Climate adaptation / UK science minister / South Korea restructures science institute / EU research chief / Lasker awards

CAREERS



451 COLUMN

Celebrate sustainable travel at conferences

Seven tips for reducing the carbon footprint of meetings

453 Q&A

Inclusive polar research

Postdoc Pat Wongpan describes efforts to do responsible research at the poles

NEWS IN FOCUS

317 METEOROLOGY

Meet the weather observers on climate change's front lines

318 MARINE SCIENCE

Great Barrier Reef researchers gripped by 'ecological grief'

319 DESERTIFICATION

African nations urge UN to prioritize drought research



320 ECOLOGY

Melting sea ice and widespread fires cap a dramatic northern summer

322 ASTROPHYSICS

Radio bubbles found at Galaxy's heart

FEATURES



CLIMATE CHANGE

Hard truths

A graphical look at how nations are doing at reining in their greenhouse-gas emissions **PAGE 324**

328 FUNDING

Climate finance: The money trail

Cash to fight global warming falls far short of need

COMMENT



ECOLOGY

Save reefs

Fix root causes globally, not symptoms locally, advise Tiffany H Morrison and colleagues **PAGE 333**

337 ACTIVISM

Why I broke the law for climate change

Farhana Yamin

Lawyer describes what drove her to civil disobedience

BOOKS & ARTS

340 CLIMATE POLITICS

Radical reform and the Green New Deal

Michael Mann

341 CLIMATE SCIENCE

Making the planetary personal

Ruth Morgan

343 ENVIRONMENT

Into the light: nature, culture, change

Barbara Kiser

344 RESOURCES

The energy crunch

Melanie Moses

CORRESPONDENCE

346 Elephant hunting / Marine conservation in China / BRCA testing for men / Study gaming addictions

FUTURES

456 The monster and the child

Dolly Garland



CONTENTS

19 September 2019 / Vol 573 / Issue No 7774

RESEARCH

NEW ONLINE

347 Papers published this week at nature.com

NEWS & VIEWS

348 FORUM: ENVIRONMENTAL SCIENCE

Climate-policy models debated

Opposing views on the suitability of integrated assessment models
Kevin Anderson; Jessica Jewell

350 DEVELOPMENTAL BIOLOGY

A model of human embryo implantation

Innovative microfluidic device enables study of embryo development
Amander T Clark [SEE LETTER P.421](#)

351 COMPUTING

Stochastic magnetic bits rival quantum bits

Prime factorization using a nanomagnet chip
Dmitri E Nikonov [SEE LETTER P.390](#)

353 TUMOUR BIOLOGY

Survival skills ensure that cancer spreads

Expression of the protein E-cadherin aids the process of metastasis
Roger R Gomis [SEE LETTER P.439](#)

354 ASTROPHYSICS

A galaxy with hiccups

Evidence of possible rapid restructuring of an accretion disk
Bożena Czerny [SEE LETTER P.381](#)

355 EPIGENETICS

A key to unlock chromatin

Structure of the MLL multiprotein complexes revealed
Steven J Gambelin & Jon R Wilson
[SEE LETTER P.445](#)

ARTICLES

357 CLIMATE CHANGE A new scenario logic for the Paris Agreement long-term temperature goal

J Rogelj et al.

364 HUMAN BEHAVIOUR A national experiment reveals where a growth mindset improves achievement

D S Yeager et al.

370 NEUROSCIENCE Temporal plasticity of apical progenitors in the developing mouse neocortex

P Oberst et al.

PALAEONTOLOGY

Last walk

Fossil marks the end of the road for an Ediacaran bilaterian. [PAGE 412](#)



375 MOLECULAR BIOLOGY A unified mechanism for intron and exon definition and back-splicing

X Li et al.

LETTERS

381 ASTROPHYSICS Nine-hour X-ray quasi-periodic eruptions from a low-mass black hole galactic nucleus

G Miniutti et al. [SEE N&V P.354](#)

385 QUANTUM PHYSICS Quantum critical behaviour at the many-body localization transition

M Rispoli et al.

390 COMPUTING Integer factorization using stochastic magnetic tunnel junctions

W A Borders et al. [SEE N&V P.351](#)

394 ENERGY SCIENCE Intrinsically stable organic solar cells under high-intensity illumination

Q Burlingame et al.

398 CHEMISTRY Hindered dialkyl ether synthesis with electrogenerated carbocations

J Xiang et al.

403 CLIMATE SCIENCE Rapid expansion of Greenland's low-permeability ice slabs

M MacFerrin et al.

408 CLIMATE-CHANGE MITIGATION Climate and air-quality benefits of a realistic phase-out of fossil fuels

D Shindell & C J Smith

412 PALAEOLOGY Death march of a segmented and trilobate bilaterian elucidates early animal evolution

Z Chen, C Zhou, X Yuan & S Xiao

416 GENOMICS Genome architecture and stability in the *Saccharomyces cerevisiae* knockout collection

F Puddu et al.

421 DEVELOPMENTAL BIOLOGY Controlled modelling of human epiblast and amnion development using stem cells

Y Zheng et al. [SEE N&V P.350](#)

426 CELL BIOLOGY Asymmetric lysosome inheritance predicts activation of haematopoietic stem cells

D Loeffler et al.

430 IMMUNOTHERAPY Targeting cardiac fibrosis with engineered T cells

H Aghajanian et al.

434 IMMUNOLOGY SLC19A1 transports immunoreactive cyclic dinucleotides

R D Luteijn et al.

439 TUMOUR BIOLOGY E-cadherin is required for metastasis in multiple models of breast cancer

V Padmanaban et al. [SEE N&V P.353](#)

445 EPIGENETICS Structural basis of nucleosome recognition and modification by MLL methyltransferases

H Xue et al. [SEE N&V P.355](#)

DEVELOPMENTAL BIOLOGY

Pattern recognition

Device recreates early development with stem cells. [PAGE 421](#)

