

# Jérôme WEISS

Nationality: French

Date of birth: 01/01/1966

Married, 3 children

## • EDUCATION

1992 PhD in Materials Science, Ecole Nationale Supérieure des Mines de Paris

1988 Master of Science in Geophysics, Institut National Polytechnique de Lorraine

1988 Master of Engineering in Geophysics, Ecole Nationale Supérieure de Géologie de Nancy

## • CURRENT POSITION

2014 – Directeur de Recherche CNRS 1st Class (DR1), Institut des Sciences de la Terre (ISTerre), Grenoble

## • PREVIOUS POSITIONS

2005 - 2014 Directeur de Recherche CNRS 2<sup>nd</sup> Class (DR2), Laboratoire de Glaciologie et Géophysique de l'Environnement (LGGE), Grenoble

1994-2005 Chargé de Recherche CNRS, LGGE, Grenoble

## • FELLOWSHIPS AND AWARDS

2014 Guest Professor, Université de Rennes I

2012 *La Recherche* Prize in Environmental Science

2007 Guest Professor, Université de Louvain la Neuve (Belgium)

1992-1993 Post-doctoral Fellow at the Ice Research Lab, Dartmouth College, Hanover, NH (US)

1993 Lavoisier Fellowship from the French Ministry of Foreign Affairs

## • RESEARCH

- Fundamentals of plasticity, collective dislocation dynamics, plastic fluctuations, size effects
- Complex systems, scaling laws and criticality: from Materials Science to Geophysics
- Failure as a critical transition - Size effects on strength
- Deformation of granular media, strain avalanches, localization
- Fatigue of materials
- Mechanics of friction and faulting
- Sea ice mechanics and modelling
- Sea ice drift and deformation: impact on climate

## • PUBLICATIONS

Number of citations: ~ 4400

h-index: 34

1 Monograph: *Drift, Deformation and Fracture of Sea Ice : A perspective across scales*, Springer, 2013 (from an invitation to write it)

89 Publications in peer-reviewed international journals, including 10 invited/solicited papers/reviews, 2 *Nature*, 1 *Science*, 1 *PNAS*, 1 *Nature Materials*, 1 *Scientific Rep.*, 4 *Phys. Rev. Lett.*, 4 *Acta Materiala*, 12 *J. Geophys. Res.*, 2 *EPSL*,...

22 Publications in peer-reviewed international conference proceedings

45 Invited conferences, plenary and keynote lectures (*excluding* invited seminars)

## • SUPERVISION OF PhD STUDENTS AND POSTDOCTORAL FELLOWS

2017 – Post-Doc, K. Karimi, *Mechanics of granular media*

2016 – PhD, N. Kandula, *Spatio-temporal nature of rock deformation*

2016 – PhD, D. Basaloiu, *Modeling the fracture mechanics of sea ice*

- 2016 – 2018 Postdoc, V. Dansereau, *Sea ice modeling* (currently Research Scientist at NERSC, Bergen, Norway)
- 2015 – PhD, C.C. Vu, *Size effects on strength in concrete*
- 2015 – PhD, C. Lachaud, *Faulting vs healing: an experimental model*
- 2012 – 2016 PhD, V. Dansereau, *Sea ice rheology and modeling*, currently Post-doc at ISTERre
- 2012 – 2015 PhD, M. Rabatel, *Discrete element modeling of sea ice mechanics*, currently Postdoc at NERSC, Bergen, Norway
- 2011 – 2014 PhD, J. Krug, *Ice Shelves and calving mechanics*, currently Research Engineer, IFSTTAR, Lyon
- 2009 – 2013 PhD, W. Ben Rhouma, *Fatigue failure precursors*, currently teaching assistant at Université de Bordeaux
- 2009 – 2012 PhD, F. Gimbert, *Deformation of granular media*, after a postdoc at CalTech, currently Chargé de Recherche CNRS, IGE, Grenoble
- 2007 – 2010 PhD, L. Girard, *Failure as a critical phenomenon*, after a Postdoc at University of Zürich, currently in the private sector (geoengineering)
- 2007 – 2008 Postdoc, P.A. Roux, *Sea Ice Seismology*, currently in the private sector (Oil industry)
- 2005 – 2008 PhD, P. Rampal, *Sea ice drift and deformation*, after a Postdoc at MIT, currently Senior Research Scientist at NERSC, Bergen (Norway)
- 2003 – 2006 PhD, T. Richeton, *Criticality in crystalline plasticity*, “Best thesis prize” INPG, currently Chargé de Recherche CNRS, LEM3, Metz
- 2001 – 2004 PhD, G. Durand, *Analysis of deep ice cores*, currently Chargé de Recherche CNRS, LGGE, Grenoble
- 1999 – 2002 PhD, A. Helmstetter, *Failure and instabilities*, currently Chargé de Recherche CNRS, ISTERre, Grenoble

#### • TEACHING ACTIVITIES

- 2010 – 2016 Ice mechanics, Ecole Nationale des Sports de Montagne, Chamonix
- 2005 – 2016 Fracture and faults mechanics (Master), Université J. Fourier, Grenoble
- 2005 – 2013 Complex systems in geophysics (Master and PhD), Université J. Fourier, Grenoble
- 1998 – 2001 Metrology (Master), Université J. Fourier, Grenoble
- 1995 – 2001 Solid Mechanics (Bachelor), Université J. Fourier, Grenoble

#### • OUTREACH

- 10 popularisation papers in French (*La Recherche, Pour la Science,...*) or Swiss magazines
- ~ 15 Interviews in French and Swiss radios and TVs about Arctic sea ice, ice physics and mechanics,...
- ~ 10 General audience conferences
- 1 movie about the physics of frozen waterfalls (presented in science or mountaineering movie festivals)

#### • RESEARCH EXPEDITIONS

In 2005, I led an expedition of 4 scientists during 15 days in Storfjord, Svalbard to install a seismic and a GPS network on sea ice, within the framework of my project *Banquise* funded by the French Polar Institute. This was a first attempt to study sea ice fracturing and deformation from ice-tethered seismological tools. This launched subsequent field seismic studies that I organized and scientifically led within the framework of the FP6 Project *DAMOCLES* and the ANR project *WaveSIMM*, while not participating myself to the field campaigns in those cases.

#### • ORGANISATION OF INTERNATIONAL SCIENTIFIC CONFERENCES

- 2019 *Avalanche Dynamics and Precursors to Catastrophic Events*, Les Houches, February 4-8, 2019
- 2016 *CECAM Workshop on Challenges in crystal plasticity: from discrete dislocations to continuum models*, Lugano (Switzerland), February 27 - March 1<sup>st</sup>, 2017
- 2016 *CECAM Workshop on The flow of amorphous solids: from atomistic simulations to Earth Science applications*, Lyon, 15-17 June, 2016
- 2014 *International Symposium on Sea-Ice mechanical modeling: from physics to applied mathematics*, Grenoble, June 4-6, 2014

- 2014 *IGS International Symposium on Glaciers and Ice Sheets Contribution to Sea-Level Change*, Chamonix, 26-30 May
- 2012 *Materials Deformation: Fluctuations, Scaling, Predictability*, Les Houches, January 22-27
- 2002 *IGS International Symposium on Physical and Mechanical Processes in Ice in Relation to Glacier and Ice-Sheet Modelling*, Chamonix, France, August 26-30

- **INSTITUTIONAL RESPONSIBILITIES**

2002 – 2009 Team leader, Ice Mechanics Group, LGGE

- **COMMISSIONS OF TRUST**

2012 – Member of the Scientific Advisory board, Observatoire des Sciences de l'Univers de Grenoble (OSUG)

2006 – 2015 Member of the Scientific Advisory board, NGO *Le Cercle Polaire*

2012 – 2014 Member of the Scientific Advisory board, Ecole Normale Supérieure de Lyon

2011 – 2014 Member of the Scientific Evaluation board of the LEFE program of INSU

2003 – 2006 Member of the Evaluation Board, Institut National Polytechnique de Grenoble

## PUBLICATION LIST

### Books :

[B1] - Weiss, J., Drift, deformation and fracture of sea ice – A perspective across scales, *Springer*, ISBN-10: 9400762011, 2013

[B2] - Weiss, J., Towards an ice-free Arctic Ocean ? in What Holds The Arctic Together, C. Pelaudeix, A. Faure and R. Griffiths (eds), *L'Harmattan, Coll. Logiques Politiques*, 2012

### Invited reviews or commentaries:

[R10] - Weiss, J., Exploring the "solid turbulence" of sea ice dynamics down to unprecedented small scales, *J. Geophys. Res.*, **122**, JC013236, 2017

[R9] - Weiss, J. and V. Dansereau, Linking scales in sea ice mechanics, *Phil. Trans. R. Soc. A.*, **375**, 20150352, 2017

[R8] - Vihma, T., R. Pirazzini, I. A. Renfrew, J. Sedlar, M. Tjernström, T. Nygård, I. Fer, C. Lüpkes, D. Notz, J. Weiss, D. Marsan, B. Cheng, G. Birnbaum, S. Gerland, D. Chechin, and J. C. Gascard, Advances in understanding and parameterization of small-scale physical processes in the marine Arctic climate system: a review, *Atmos. Chem. Phys.*, **14**, 9403-9450, 2014

[R7] - Duval, P., M. Montagnat, F. Grennerat, J. Weiss, J. Meyssonier and A. Philip, Creep and plasticity of glacier ice: a material's science perspective, *J. Glaciol.*, **56** (200), 1059-1068, 2010

[R6] - Weiss, J. and Schulson, E.M., Coulombic faulting from the grain scale to the geophysical scale: Lessons from ice, *J. Phys. D: Appl. Phys.*, **42**, 214017, 2009

[R5] - Weiss, J. and Montagnat, M., Long-range spatial correlations and scaling in dislocation and slip patterns, *Philosophical Magazine*, **87**, (8-9) 1161-1174, 2007

[R4] - Weiss, J. and Louchet, F., Seismology of plastic deformation, *Scripta Materiala*, **54**, 747-751, 2006

[R3] - Weiss, J., Ice: from dislocations to icy satellites, *C.R. Acad. Physique*, **5**, 683-685, 2004

[R2] - Weiss, J., Scaling of fracture and faulting in ice on Earth, *Surveys in Geophysics*, **24**, (2), 185-227, 2003

[R1] - Weiss, J., Fracture and fragmentation of ice: a fractal analysis of scale invariance, *Eng. Frac. Mech.*, **68**, (17-18) 1975-2012, 2001

### Peer-reviewed papers in international journals:

[J79] – Renard, F., J. Weiss, J. Mathiesen, Y. Ben-Zion, N. Kandula, B. Cordonnier, Critical evolution of damage towards system-size failure in crystalline rock, *J. Geophys. Res.*, **123**, JB014964, 2018 (*EOS Editors' highlights: What happens inside rocks as they fail ?*, M. Cooke, 21/03/2018)

[J78] - Moreau, L., C. Lachaud, R. They, M.V. Predoi, D. Marsan, E. Larose, J. Weiss and M. Montagnat, Monitoring ice thickness and elastic properties from the measurement of leaky guided waves: a laboratory experiment, *J. Acoust. Soc. Am.*, **142** (5), 2873-2880, 2017

- [J77] - Deschanel, S., W. Ben-Rhouma and J. Weiss, Acoustic emission multiplets as early warnings of fatigue failure in metallic materials, *Sci. Rep.*, **7**, 13680, 2017  
(*Alerte Presse du CNRS du 20/10/2017 et Actualités Scientifiques de l'INSIS et l'INSU. Le Progrès*, 2/11/2017)
- [J76] - Renard, F., B. Cordonnier, M. Kobchenko, N. Kandula, J. Weiss and W. Zhu, Microscale characterization of rupture nucleation unravels precursors to faulting in rocks, *Earth Planet. Sci. Lett.*, **476**, 69-78, 2017
- [J75] - Vu, C.C., J. Weiss, O. Plé and D. Amitrano, Statistical size effects on compressive strength and mechanical behavior of concrete, *Key Eng. Mat.*, **754**, 317-320, 2017
- [J74] - Dansereau, V., J. Weiss, P. Saramito, P. Lattes and E. Coche, Ice bridges and ridges in the Maxwell-EB sea ice rheology, *The Cryosphere*, **11**, 2033-2058, 2017
- [J73] - Zhang, P., Salman, O.U., Zhang, J.Y., Liu, G., Weiss, J., Truskinovsky, L. and Sun, J., Taming intermittent plasticity at small scales, *Acta Materialia*, **128**, 351-364, 2017
- [J72] - Weiss, J., V. Pellissier, D. Marsan, L. Arnaud and F. Renard, Cohesion versus friction in controlling the long-term strength of a self-healing experimental fault, *J. Geophys. Res.*, **121**(12), 8523-8547, 2016
- [J71] - Dansereau, V., J. Weiss, P. Saramito and P. Lattes, A Maxwell-Elasto-Brittle rheology for sea ice modeling, *The Cryosphere*, **10**, 1339-1359, 2016
- [J70] - Rabatel, M., S. Labbé, and J. Weiss, Dynamics of an assembly of rigid ice floes, *J. Geophys. Res. - Oceans*, **120**, 010909, 2015
- [J69] - Krug, J., Durand, G., Gagliardini, O. and Weiss, J., Modelling the impact of submarine frontal melting and ice mélange on glacier dynamics, *The Cryosphere*, **9**, 989-1003, 2015
- [J68] - Weiss, J., Ben Rhouma, W., Richeton, T., Deschanel, S., Louchet, F. and Truskinovsky, L., From mild to wild fluctuations in crystal plasticity, *Phys. Rev. Lett.*, **114**, 105504, 2015
- [J67] - Lehoucq, R., J. Weiss, B. Dubrulle, A. Amon, A. Le Bouil, J. Crassous, D. Amitrano, and F. Graner, Analysis of image versus position, scale and direction reveals pattern texture anisotropy, *Frontiers in Physics*, **2**, 84, 2015
- [J66] - Krug, J., Weiss, J., Gagliardini, O. and Durand, G., Combining damage and fracture mechanics to model calving, *The Cryosphere*, **8**, 2101-2117, 2014
- [J65] - Weiss, J., Girard, L., Gimbert, F., Amitrano, D. and Vandembroucq, D., (Finite) size effects on compressive strength, *PNAS*, **111** (17), 6231-6236, 2014 (*Actualités Scientifiques de L'INSIS*, 29 Avril 2014)
- [J64] - Gimbert, F., Amitrano, D. and Weiss, J., Crossover from quasi-static to dense flow regime in compressed frictional granular media, *EPL*, **104**, 46001, 2013
- [J63] - Gagliardini, O., Weiss, J., Duval P., and Montagnat, M., Correspondence: On Duddu and Waisman (2012a, 2012b) concerning continuum damage mechanics applied to crevassing and icebergs calving, *J. Glaciol.*, **59**(216), 797-798, 2013
- [J62] - Gauthier, F., Montagnat, M., Weiss, J., Allard, M. and Hetu, B., Ice cascade growth and decay: a thermodynamic approach, *J. Glaciol.*, **59**(215), 507-523, 2013

- [J61] - Gimbert, F., Marsan, D., Weiss, J., Jourdain, N.C. and Barnier, B., Sea ice inertial oscillations in the Arctic Basin, *The Cryosphere*, **6**, 1187-1201, 2012
- [J60] - Gimbert, F., Jourdain, N.C., Marsan, D., Weiss, J. and Barnier, B., Recent mechanical weakening of the arctic sea ice cover as revealed by larger inertial oscillations, *J. Geophys. Res.*, **117**, C00J12, 2012
- [J59] - Girard, L., J. Weiss and D. Amitrano, Damage-cluster distributions and size effect on strength in compressive failure, *Phys. Rev. Lett.*, **108**, 225502, 2012
- [J58] - Duval, P., Louchet, F., Weiss, J. and Montagnat M., On the role of long-range internal stresses on grain nucleation during dynamic discontinuous recrystallization, *Mat. Sci. Eng. A*, **546**, 207-211, 2012
- [J57] - Marcq, S. and Weiss, J.: Influence of leads widths distribution on turbulent heat transfer between the ocean and the atmosphere, *The Cryosphere*, **6**, 143-156, 2012
- [J56] - Marsan, D., J. Weiss, E. Larose and J.P. Metaxian, Sea-ice thickness measurement based on the dispersion of ice swell, *J. Acoust. Soc. Am.*, **131** (1), 80-91, 2012
- [J55] - Rampal, P., J. Weiss, C. Dubois, J.M. Campin, IPCC climate models do not capture Arctic sea ice drift acceleration: Consequences in terms of projected sea ice thinning and decline, *J. Geophys. Res.*, **116**, C00D07, 2011  
(Revue de Presse: *Communiqué de presse du CNRS* du 29/09/2011 ; *EOS*, 37, 384, 2011, *MIT News* 10/08/2011 ; *sciences.blog.liberation* du 6/09/2011 ; *Libération*, 7/09/2012)
- [J54] - Weiss, J., Montagnat, M., B. Cinquin-Lapierre, P.A. Labory, L. Moreau, F. Damilano, and D. Lavigne, Waterfall ice: mechanical stability of vertical structures, *J. Glaciol.*, **57**(203), 407-415, 2011  
(Revue de Presse : *Vertical Magazine*, n°28 – 2011, pp8-9 ; *Alpes Magazine*, 2011, Montagnes Magazine, 2011; *Revue du Club Alpin Français Alpes Dauphiné Savoie*, n°139, pp24-25, 2011)
- [J53] - Marsan, D., Weiss, J., Metaxian, J.P., Grangeon, J., Roux, P.F. and Haapala, J., Low frequency bursts of horizontally-polarized waves in the Arctic sea ice cover, *J. Glaciol.*, **57**(202), 231-237, 2011
- [J52] - Girard, L., S. Bouillon, J. Weiss, D. Amitrano, T. Fichet, V. Legat, A new modelling framework for sea ice ice mechanics based on elasto-brittle rheology, *Annals Glaciol.*, **52**(57), 123-132, 2011
- [J51] - Li, R., Picu, R.C. and J. Weiss, Dynamics below the depinning transition of interacting dislocations moving over fields of obstacles, *Phys. Rev. E*, **82**, 022107, 2010
- [J50] - Marsan, D. and J. Weiss, Space/time coupling in brittle deformation at geophysical scales, *Earth Planet. Sci. Lett.*, **296**, 353-359, 2010
- [J49] - Montagnat, M., J. Weiss, B. Cinquin-Lapierre, P.A. Labory, L. Moreau, F. Damilano, and D. Lavigne, Waterfall ice: formation, structure and evolution, *J. Glaciol.*, **56**(196), 225-234, 2010  
(Revue de Presse : *Le Journal du CNRS*, n° 244 – Mai 2010, *Zoom*, pp 28-30, *CNRS International Magazine*, n°18-July 2010, pp28-30)
- [J48] - Girard, L., Amitrano, D., and Weiss, J., Failure as a critical phenomenon in a progressive damage model, *J. Stat. Mech.*, P01013, 2010
- [J47] - Louchet, F., Duval, P., Montagnat, M. and Weiss, J., Are self-organised critical dislocation dynamics relevant to ice sheet flow?, in *Physics of Ice core records II, Low Temperature Science*, Supplement Issue, **68**, 25-33, 2009

- [J46] - Rampal, P., Weiss, J., Marsan, D. and Bourgoïn, M., Arctic sea ice velocity field: general circulation and turbulent-like fluctuations, *J. Geophys. Res.*, **114**, C10014, 2009
- [J45] - Girard, L., Weiss, J., Molines, J.M., Barnier, B. and Bouillon, S., Evaluation of high resolution sea ice models on the basis of statistical and scaling properties of Arctic sea ice drift and deformation, *J. Geophys. Res.*, **114**, C08015, 2009
- [J44] - Lebyodkin, M.A., Lebedkina, T.A., Chmelík, F., Lamark, T.T., Estrin, Y., Fressengeas, C. and Weiss, J., Intrinsic structure of acoustic emission events during jerky flow in an Al alloy, *Phys. Rev. B*, **79**, 174114, 2009  
(selected for *Virtual Journal of Nanoscale Science & Technology*, **19** (23), 2009)
- [J43] - Rampal, P., Weiss, J. and Marsan, D., Positive trend in the mean speed and deformation rate of Arctic sea ice, 1979-2007, *J. Geophys. Res.*, **114**, C05013, 2009  
(Revue de Presse: *Communiqué de presse du CNRS* du 13/05/2009 ; *Rapport Scientifique du CNRS 2009* ; *Dépêche Agence France Presse* du 14/05/2009 ; *Le Nouvel Observateur*, 21/05/2009 ; *Les Echos* du 15/05/2009)
- [J42] - Weiss, J., Marsan, D. and Rampal, P., Space and time scaling laws induced by the multiscale fracturing of the Arctic sea ice cover, in *Scaling in Solid Mechanics*, IUTAM Bookseries Vol. **10**, Springer (P. Borodich Ed.), 101-109, 2009
- [J41] - Weiss, J., Intermittency of principal stress directions within Arctic sea ice, *Phys. Rev. E*, **77**, 056106, 2008
- [J40] - Taupin, V., Richeton, T., Chevy, J., Fressengeas, C., Weiss, J., Louchet, F., and Miguel, M.C., Rearrangement of dislocations structures in the aging of ice single crystals, *Acta Mat.*, **56**, 1555-1563, 2008
- [J39] - Rampal, P., Weiss, J., Marsan, D., Lindsay, R., Stern, H., Scaling properties of sea ice deformation from buoy dispersion analysis, *J. Geophys. Res.*, **113**, C03002, 2008
- [J38] - Weiss, J., Richeton, T., Louchet, F., Chmelik, F., Dobron, P., Entemeyer, D., Lebyodkin, M., Lebedkina, T., Fressengeas, C. and Mc Donald, R.J., Evidence for universal intermittent crystal plasticity from acoustic emission and high-resolution extensometry experiments, *Phys. Rev. B*, **76**, 224110, 2007
- [J37] - Richeton, T., Weiss, J., Louchet, F., Dobron, P., Chmelik, F., Critical character of plasticity from AE experiments in hcp and fcc metals, *Kovove Mater.*, **45**, 149-152, 2007
- [J36] - Weiss, J., Schulson, E.M., Stern, H.L., Sea ice rheology from in-situ, satellite and laboratory observations: Fracture and friction, *Earth Planet. Sci. Lett.*, **255**, 1-8, 2007  
(Revue de Presse: *La Recherche*, **408**, 15, 2007)
- [J35] - Chevy, J., Montagnat, M., Duval, P., Fivel, M. and Weiss, J., Dislocation patterning and deformation processes in ice single crystals deformed by torsion, *Physics and Chemistry of Ice*, (Kuhs W.F., Ed.), *Special Publication – Royal Society of Chemistry*, **311**, 141-146, 2007
- [J34] - Louchet, F., Weiss, J. and Richeton, T., Hall-Petch law revisited in terms of collective dislocation dynamics, *Phys. Rev. Lett.*, **97**, 075504, 2006  
(Revue de Presse: *Le Journal du CNRS*, **204**, 12, 2007)
- [J33] - Richeton, T., Dobron, P., Chmelik, F., Weiss, J. and Louchet, F., On the critical character of plasticity in metallic single crystals, *Mat. Sci. Eng. A*, **424**, 190-195, 2006

- [J32] - Montagnat, M., Weiss, J., Chevy, J., Duval, P., Brunjail, H., Bastie, P. and Gil Sevillano, J., The heterogeneous nature of slip in ice single crystals deformed under torsion, *Philosophical Magazine*, **86**, (27) 4259-4270, 2006
- [J31] - Durand, G., Weiss, J., Lipenkov, V., Barnola, J.M., Krinner, G., Parrenin, F., Delmonte, B., Ritz, C., Duval, P., Rothlisberger, R., Bigler, M., Effect of impurities on grain growth in cold ice sheets, *J. Geophys. Res.*, **111**, F01015, doi:10.1029/2005JF000320, 2006
- [J30] - Richeton, T., Weiss, J. and Louchet, F., Dislocations avalanches: role of temperature, grain size and strain hardening, *Acta Materialia*, **53**, 4463-4471, 2005
- [J29] - Weiss, J., Graner, F. and Durand, G., Comment on “Deformation of grain boundaries in polar ice”: Reply, *Europhys. Lett.*, **71**, (5) 875-876, 2005
- [J28] - Richeton, T., Weiss, J. and Louchet, F., Breakdown of avalanche critical behaviour in polycrystalline plasticity, *Nature Materials*, **4**, 465-469, 2005  
(voir aussi: News and views: Plasticity goes supercritical, p425-426, meme issue)
- [J27] - Weiss, J., Sub-critical crack propagation as a mechanism of crevasse formation and iceberg calving, *J. Glaciol.*, **50** (168),109-115, 2004
- [J26] - Marsan, D., H. Stern, R. Lindsay and J. Weiss, Scale dependence and localization of the deformation of Arctic sea ice, *Phys. Rev. Lett.*, **93** (17), 178501, 2004
- [J25] - Durand, G., F. Graner and J. Weiss, Deformation of grain boundaries in polar ice, *Europhys. Lett.*, **67** (6), 1038-1044, 2004
- [J24] - Weiss, J. and D. Marsan, Scale properties of sea ice deformation and fracture, *C.R. Acad. Physique*, **5**, 735-751, 2004
- [J23] - EPICA community members (including J.Weiss), 8 Glacial cycles from an Antarctic ice core, *Nature*, **429**, 623-628, 2004  
(voir aussi *News feature*: Frozen time, p596-597, même issue)
- [J22] - Weiss, J. and M.C. Miguel, Dislocation avalanche correlations, *Mat. Sci. Eng. A*, **387-389C**, 292-296, 2004
- [J21] - Weiss, J. and D. Marsan, Three dimensional mapping of dislocation avalanches: clustering and space/time coupling, *Science*, **299** (5603), 89-92, 2003  
(voir aussi *This week in Science*: Complex plastic flow, p13, même issue)
- [J20] - Weiss, J., Vidot, J., Gay, M., Arnaud, L., Duval, P. and Petit, J.R., Dome Concordia ice microstructure: impurities effect on grain growth, *Annals of Glaciology*, **35**, 552-558, 2002
- [J19] - Weiss, J., Self-affine fracture surfaces and size effect on fracture energy, *Int. J. Fracture*, **109**, 365-381, 2001
- [J18] - Weiss, J., Scale invariance of fracture surfaces in ice, in *IUTAM symposium on Scaling Laws in Ice Mechanics and Ice Dynamics*, (J. Dempsey and H.H. Shen Eds.), Solid Mechanics and its Applications, Kluwer Academic Publishers, **94**, 217-226, 2001
- [J17] - Miguel, M.-C., A. Vespignani, S. Zapperi, J. Weiss, and J.R. Grasso, Intermittent dislocation flow in viscoplastic deformation, *Nature*, **410**, 667-671, 2001  
(voir aussi *News and Views*: Turbulent Creep, p647, même issue)



- [J16] - Weiss, J., J.R. Grasso, M.C. Miguel, A. Vespignani, and S. Zapperi, Complexity in dislocation dynamics: experiments, *Materials Science and Engineering: A*, **309-310**, 360-364, 2001
- [J15] - Miguel, M.-C., A. Vespignani, S. Zapperi, J. Weiss, and J.R. Grasso, Complexity in dislocation dynamics: model, *Materials Science and Engineering: A*, **309-310**, 324-327, 2001
- [J14] - Weiss, J. and E.M. Schulson, Grain boundary sliding and crack nucleation in ice, *Philosophical Magazine A*, **80**, 279-300, 2000
- [J13] - Weiss, J., F. Lahaie and J.R. Grasso, Statistical analysis of dislocation dynamics during viscoplastic deformation from acoustic emission, *J. Geophys. Res.*, **105**, 433-442, 2000
- [J12] - Arnaud, L., J. Weiss, M. Gay and P. Duval, Shallow ice microstructure at Dome Concordia, Antarctica, *Annals of Glaciology*, **30**, 8-12, 2000
- [J11] - Gay, M. and J. Weiss, Automatic reconstruction of polycrystalline ice microstructure from image analysis: application to the EPICA ice core at Dome Concordia, Antarctica, *J. Glaciol.*, **45**, 547-554, 1999
- [J10] - Weiss, J. and M. Gay, Fracturing of ice under compression creep as revealed by a multifractal analysis. *J. Geophys. Res.*, **103**, (B10) 24005-24016, 1998.
- [J9] - Weiss, J., J. R. Grasso and P. Martin, AE and scaling laws in micro-structurally controlled ice samples. *AE/MS in Geological structures and Materials*, (H.R. Hardy Ed.), Trans Tech Publications, Germany, Series on Rock and Soil Mechanics, **21**, 583-595, 1998
- [J8] - Weiss, J., The role of the attenuation on acoustic emission amplitude distributions and b-values. *Bull. Seism. Soc. Am.*, **87**, (5) 1362-1367, 1997.
- [J7] - Weiss, J. and J.-R. Grasso, Acoustic emission in single crystals of ice. *The Journal of Physical Chemistry*, **101**, (32) 6113-6117, 1997.
- [J6] - Plé, O., J. Meyssonier and J. Weiss, Microcrack nucleation in different kinds of artificial ice during uniaxial compression creep experiments. in *IUTAM symposium on Micromechanics of Plasticity and Damage of Multiphase Materials*, (Pineau, A. et al., ...Eds), Solid Mechanics and its Applications, Kluwer Academic Publishers. **46**, 223-230, 1996.
- [J5] - Weiss, J., E. M. Schulson and H. J. Frost, The nucleation of microcracks in ice cubes compressed equally on all boundaries. *Philosophical Magazine A*, **73**, (5) 1385-1400, 1996.
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