Weather-related loss events worldwide 1980 – 2017

Overall and insured losses

- Major contribution from hurricane season: US$ 215bn (most expensive ever).
- 93% of all events were weather-related, contributing US$ 320bn.
- 2017 is costliest year ever in terms of global weather disasters.
- Reported flood events are increasing over time. Floods 2017: 47% of loss events.

US$ bn

- Overall losses (in 2016 values)
- Insured losses (in 2016 values)

Inflation adjusted via country-specific consumer price index and consideration of exchange rate fluctuations between local currency and US$.

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Loss events worldwide 2017

Example hurricane season

Event
Hurricane Harvey, overall losses US$ 85bn rainfall totals >1,000 mm in the area around Houston, return period ~ 1,000 years.

Risk of change / future perspective
Probability of strong coastal rainfall from hurricanes is increasing. Strong hurricanes (cat 4 – 5) are projected to increase with continued climate change.

Risk management perspective
Reduce U.S. flood insurance gap

Source: Munich Re, NatCatSERVICE, 2018
Loss events worldwide 2017
Example South Asia monsoon season

**Event**
Northern India, Nepal, and Bangladesh affected by flash flooding and river flood. Overall losses: US$ 3.5bn.

**Risk of change / future perspective**
Expected are a longer duration of monsoon season, higher rainfall variability, higher intensity, and an increase of 5-day rainfall sums.

**Risk management perspective:**
Improvement of resilient infrastructure (also suitably designed drainage systems), flood defence works, early warning, risk transfer/insurance.

Source: Munich Re, NatCatSERVICE, 2018

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Loss events worldwide 2017
Example East Asia monsoon season (China)

Event
Plum rains (Mei-yu rains) June-July.
Overall losses: US$ 6bn.

Last year (2016): Damages also in urban areas Wuhan, Beijing, etc
Overall losses: US$ 20bn.

Risk of change / future perspective
same as for South Asia

Risk management perspective
Improvement of resilient infrastructure (supply lines, traffic routes, also suitably designed drainage systems), flood defence works, early warning, risk transfer/insurance.

Source: Munich Re, NatCatSERVICE, 2018

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Loss events worldwide 2017

Example wildfires California

Event
Two series of devastating wildfires in California
October: north of San Francisco (8,900 structures destroyed)
December: around the Los Angeles metropolitan region
Overall losses (from October fires): US$ 10.5bn

Strong vegetation growth after the extraordinary wet winter 2016/17 in northern California → source of fuel for burning.

Risk of change / future perspective
Probability of wildfire-prone environmental conditions is increasing due to rising temperatures and evapotranspiration rates in CA.

Risk management perspective
Use of flame-retardant construction materials, maintaining a defensible perimeter of 25-30 m around the house.

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Loss events worldwide 2017

Example drought southern Europe

Event
Dry and hot in southern / mediterranean Europe.
Overall drought losses: US$ 3.8bn

Central and southern Italy: precipitation deficit since November 2016, elevated temperature levels. Strong heat wave July-August, widespread >40°C.
Hot and dry also in parts of Spain, Portugal, southern France, Balkans, Greece. Wildfires.

Risk of change / future perspective
Drought frequency in the Mediterranean is already increasing.

Risk management perspective
Limiting water use, water recycling, sea water desalination plants etc,
Loss events worldwide 2017
Geographical overview

- **Wildfire (LNU Complex Fires)**
  - 8-20 Oct
  - USA
  - Fatalities: 25

- **Wildfire (Thomas Fire)**
  - December
  - USA
  - Fatalities: 2

- **Hurricane Harvey**
  - 25 Aug – 1 Sep
  - USA
  - Fatalities: 88

- **Hurricane Irma**
  - 6-14 Sep
  - Caribbean, North America
  - Fatalities: 128

- **Drought**
  - Jan – Oct
  - (Western-, Southern Europe)

- **Winter damage, frost**
  - 15 Apr - 9 May
  - Europe

- **Flood**
  - Jun - Oct
  - South Asia
  - Fatalities: 1,787

- **Flood, landslide**
  - 22 Jun - 5 Jul
  - China
  - Fatalities: 56

- **Earthquake**
  - 12 Nov
  - Iran, Iraq
  - Fatalities: 630

- **Typhoon Hato**
  - 23 Aug
  - China, Vietnam
  - Fatalities: 22

- **Cyclone Debbie**
  - 27 Mar – 6 Apr
  - Australia
  - Fatalities: 12

- **Drought (Western, Southern Europe)**

- **Storm**
  - 19 Sep
  - Mexico
  - Fatalities: 369

- **Landslide**
  - 14 Aug
  - Sierra Leone
  - Fatalities: 500

- **Wildfire (Knysna Fire)**
  - 7-13 Jun
  - South Africa
  - Fatalities: 9

- **Typhoon Tembin**
  - 22-24 Dec
  - Philippines
  - Fatalities: 164

- **Flood**
  - Jun - Oct
  - South Asia
  - Fatalities: 1,787

- **Flood**
  - Jan - Mar
  - Peru
  - Fatalities: 147

- **Selection of catastrophes**

- **Meteorological events**
  - (Tropical storm, extratropical storm, convective storm, local storm)

- **Geophysical events**
  - (Earthquake, tsunami, volcanic activity)

- **Hydrological events**
  - (Flood, mass movement)

- **Climatological events**
  - (Extreme temperature, drought, wildfire)

- **Loss events**

Source: Munich Re, NatCatSERVICE, 2018