Climate change: meteorologists preparing for the worst

August 21 2014, by Clément Sabourin

A woman walks through Washington Square Park during a snowstorm on February 3, 2014 in New York City

Intense aerial turbulence, ice storms and scorching heatwaves, huge ocean waves—the world's climate experts forecast apocalyptic weather over the coming decades at a conference in Montreal that ended Thursday.

The World Meteorological Organization (WMO) brought together 1,000 specialists to discuss the uncertain future of weather forecasting.

A decade after the entry into force of the Kyoto Protocol, the world's focus has shifted from reducing greenhouse gas emissions linked to warming, to dealing with its consequences.

"It's irreversible and the world's population continues to increase, so we must adapt," said Jennifer Vanos, a professor of atmospheric sciences at Texas Tech University.

Average temperatures have increased 0.47 percent degrees Celsius so far. Scientists have predicted a two-percent rise in average temperatures by 2050.

A one-degree hike translates into seven percent more water vapor in the atmosphere and because evaporation is the driving force behind air currents, more extreme weather events are expected to follow.

"We'll see clouds forming faster and more easily, and more downpours," leading to flash flooding, said Simon Wang, assistant director of the Utah Climate Center.

Broadly speaking, said the American researcher, rising temperatures will have a "multiplying effect on weather events as we know them."

Bone-chilling temperatures that swept across North America last winter will plunge even further, while summer heatwaves and droughts will be hotter and dryer, he added.

For meteorologists, the challenge will be to incorporate this "additional force" into their weather modelling, explained Wang.

A vehicle is buried in mud one day after a landslide hit a residential area in Hiroshima, western Japan on August 21, 2014

Supercomputing weather forecasts

To do so, meteorologists will need to use supercomputers to run the increasingly complex algorithms to predict weather.

British researcher Paul Williams studies the impact of climate change on jetstreams using one such computer at Princeton University in New Jersey.

After weeks of calculations, he concluded that climate change amplifies the strength of these narrow bands of predominantly westerly air currents encircling the globe several miles above the earth.

By 2050, he said, airline passengers will experience twice as much in-flight turbulence as a result.

Meanwhile on the high seas, monster waves will await cargo and cruise ships.

A hurricane forcaster studies computer models as he tracks Hurricane Irene at the National Hurricane Center on August 22, 2011 in Miami, Florida

"Maritime shipping companies are already running into enormous waves," some as high as 40 meters (130 feet), said Wang, adding that 20 meters (65 feet) high was considered exceptionally high until now.

"This is just the beginning of climate change, because the oceans will have an even greater impact releasing more heat and vapor," he warned.

Melting ice of Greenland could result in a six-meter (200-foot) rise in the world's oceans, though not likely until the next century, said Eric Brun of Meteo-France, citing a study he recently published on climate's impact on ocean levels.

Faced with so much upheaval, Jennifer Vanos said there is an urgency to adapt—including lifestyle, urban planning—to this new reality in order to protect populations.