

CATtales

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ICLR launches backwater valve installation website

The Institute for Catastrophic Loss Reduction has launched a backwater valve installation website to provide basic information about sewage backflow prevention devices to assist homeowners in better understanding what they are and how they work, and aid plumbing professionals on the protocols that should be followed to ensure that such devices are installed properly.

The website is available at <http://www.backwatervalveinstallation.com>

The protocol provides a review of the necessary steps involved in the installation of a backwater valve and is relevant to all homes serviced by underground, public sewer systems, typically located in urban areas.

The website provides information on such topics as:

- Getting the right information before you start;
- Selecting a plumber or contractor;
- Conducting plumbing investigations and CCTV

inspections of sewer laterals, including important things to ask plumbers when they are conducting inspections;

- What to consider if a sewer lateral is in poor condition or found to be the cause of sewer backup;
- Ensuring that all connections to the sanitary lateral are identified;
- Choosing a backwater valve;
- Backwater valve installation;
- Checking that the backwater valve is installed properly; and,
- Maintenance tips for backwater valves.

According to Dan Sandink, Director of Research at ICLR and architect of the backwater valve protocol website “Backwater valves are an important component of many basement flood mitigation programs. They aren’t the only consideration, but they are key. However, it is of primary importance that backwater valves be properly installed and the devices be subject to regular inspection and maintenance long after to ensure that they do what they are ►



Flood apparently trumps fire

By Glenn McGillivray, Managing Director, ICLR

The Fort McMurray wildfire will end up costing government (read: taxpayers) and insurers considerably more than the flooding in southern Alberta in 2013. However, it appears to be the flood that is having – and will continue to have – the longest lasting impact on public policy and the insurance industry of the two.

This is for a few reasons.

Overland flood the most common peril

Overland flood is the most common peril in Canada (indeed, it is the most common peril in most western developed countries). Of the close to 800 meteorological/hydrological and geophysical events captured in the Canadian Disaster Database (1900-present), close to 40% are overland floods.

Each year in the country, overland flooding causes significant damage to public infrastructure and private property, and disruption to business, and climate models indicate that extreme rainfall will

likely become more severe and frequent in the future.

Wildfire, on the other hand, while very common in Canada, seldom impacts large communities. Prior to Fort McMurray only two major fires led to any significant property loss and disruption – the 2003 wildfire in Kelowna, BC, and the 2011 wildfire in Slave Lake, Alberta.

Major Wildland Urban Interface fires were so rare in Canada that insurers and others labelled both Kelowna and Slave Lake as ‘one off’ events (which might make sense for Kelowna, but not for a second event just eight years later).

Most government disaster assistance payouts are for floods

Historically, the vast majority of federal government disaster assistance paid out to the provinces (and to citizens via the provinces) has been for flood, as most other perils are insurable in the private market.

And the costs associated with flood are projected to

increase.

According to a February 2016 Parliamentary Budget Office report, over the next five years, the DFAAs can expect costs of \$229 million a year because of hurricanes and storms, with floods adding another \$673 million, for a total of \$902 million a year.

According to the report, DFAA payments related to the 2013 southern Alberta flood event were “expected” to total \$1.347 billion. For Fort McMurray, the federal government committed \$300 million in DFAAs shortly after the disaster, a significant difference given the Fort McMurray wildfire cost insurers more than twice what the floods cost.

The large gap between the two largely reflects the insurability of fire over flood (fires are heavily insured events in Canada while floods are not, and were even less so in 2013 when no overland flood insurance was available in Canada).

Nothing gets a government’s attention and spurs it to action more than having to ►

Backwater valve website cont...

meant to do – keep unwanted wastewater out of basements.”

“We have had municipal inspectors tell us of finding backwater valves installed backwards,” says Sandink. “I have seen first hand backwater valves that have been installed without the required slope, meaning that they are at greater risk of failure over their service life. We have been told of improperly maintained backwater valves that have been found clogged with debris, blocked up with globs of cooking fat or that have their gates stuck in the open position. There are a host of

problems out there regarding backwater valves and we are trying to address many of them through this new protocol website.”

ICLR has established itself as the national leader in the development of research and resources to reduce the risk of urban and basement flooding. Materials generated by Institute researchers have been used widely by insurers, all levels of government and non-government groups engaged in disaster risk reduction and climate change adaptation. Recent key accomplishments include

formation of the ICLR Municipal Advisory Committee and research labs and engineering research capacity through an ICLR/Guelph/Western research partnership focused on lot-level flood protection. ICLR staff has also published widely cited ICLR research reports and peer reviewed papers, and has developed a strong network of government, insurance and private industry professionals involved in flood risk management and development of technologies. [CT](#)

make a large, unplanned payout for a disaster, particularly at a time when the federal budget was being cut as the government was entering into a period of austerity, as the federal government was at the time of the 2013 Alberta flood.

Insurance industry paid out more for Alberta than it should have

Though impossible to quantify and prove, Canadian property and casualty insurers likely paid out considerably more in claims for the Alberta flood than they contractually were obligated to given typical coverages and policy wordings.

Ultimately, when faced with thousands of flood damaged basements, claims adjusters often find it nearly impossible to distinguish between backup from a pipe or fixture (normally covered), seepage (sometimes covered) and overland flood (not covered in 2013). When faced with such a dilemma, adjusters will err on the side of caution, default to sewer backup as the cause, and pay the claim. According to anecdotal information, this commonly occurred after past flood events in Canada, like in Peterborough, Ontario in 2002 and 2004.

Two or three companies that had policy wordings that were different than most other companies were widely panned in the press after reports of claims being denied. These companies rapidly changed their positions and paid up.

While there are many claims challenges being faced in Fort McMurray to be sure, fire is usually more straightforward than flood, so there would not be the same questions regarding pay/don't pay.

The fact that companies paid out many claims or portions of claims without collecting corresponding premium, in my

mind, led – at least in part – to the rise of overland flood coverage in Canada.

More being done about the long term challenges associated with flood than wildfire

On March 9, Public Safety Minister Ralph Goodale, at the Fifth Regional Platform for Disaster Risk Reduction in the Americas held in Montreal, released the Federal Floodplain Mapping Framework. The Framework is the first in a series of planned Floodplain Mapping Guidelines to be released by the federal government to help reduce flood risk and associated costs in Canada.

The move marked just another in a long list of actions taken by various levels of government, including several Alberta municipalities, the Province of Alberta and the federal government, to address the issue of flood risk. Actions taken over the last few years also include several major mitigation projects, buyouts of flood-prone properties, flood mapping initiatives, building code and land use planning changes, and the launch of the federal National Disaster Mitigation Program. And chances are a healthy portion of the \$2 billion Disaster Mitigation and Adaptation Fund announced by the federal government in the March 22, 2017 budget will likely go to flood prevention infrastructure.

Flood-related initiatives from the insurance sector include the hosting of several flood conferences, a number of modelling and mapping initiatives and the launch by more than a dozen companies of overland flood insurance.

All-in-all, billions are being spent by all levels of government across the country to mitigate flood risk. However the annual budget for provincial

FireSmart programs is paltry in comparison.

On the wildfire side, nowhere near the same reaction has been triggered.

This isn't to say that nothing has been done. Since Fort McMurray, the Canadian Council of Forest Ministers has committed to revisiting and updating the 2005 Canadian Wildland Fire Strategy (CWFS). In 2016, the CCFM published *Canadian Wildland Fire Strategy: A 10-year Review and Renewed Call to Action* and has indicated that in 2017 efforts will be made by the CCFM, the Canadian Interagency Forest Fire Centre and NRCan to update the strategy.

But overall, aside from the recovery and rebuilding efforts in Fort McMurray and the work being done by a few communities that don't want to be the venue of the next wildfire disaster, the May 2016 Fort McMurray event has not triggered the same degree of soul-searching, reforms and other changes that the 2013 flooding has.

Essentially, a nexus was forged in 2013 between the federal government wishing to get out of the disaster assistance business and the Canadian insurance industry ready to get into flood insurance.

No such perfect storm was triggered by Fort McMurray.

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GOES-16: First in a new generation of weather satellites

By Geoff Coulson and Paul Ford, Meteorologists, Environment and Climate Change Canada

Background

The GOES-R (Geostationary Operational Environmental Satellite) was successfully launched by NASA (National Aeronautics and Space Administration) from Cape Canaveral, Florida on November 19, 2016. Soon after its launch, upon reaching its designated altitude and position, it was renamed GOES-16.

GOES satellites are so-named since they reside at an altitude of 36,000 kilometres above the Earth's surface at the equator and rotate in synch with the Earth. That means that the satellite always remains over the same part of the Earth and is able to continuously monitor that area. There have been 4 generations of GOES satellites since the first one was launched back in 1975. Each generation sees the launch of 3 satellites, one that is deemed GOES-East, another GOES-West and a third that is kept as a backup. Figure 1 indicates the area of coverage of the current generation of GOES satellites, GOES-13, 14 and 15. As can be seen from the figure, these satellites provide good coverage over much of Canada except for the High Arctic. Satellite imagery for the High Arctic is provided by another type of satellite known as a polar-orbiting satellite which has a much lower altitude (approx. 850 kilometres) and provides high-resolution imagery of the same area on the earth twice a day.

GOES-16 is currently in a check-out position that is between the positions of the current operational GOES-East and GOES-West satellites. Some imagery is already being produced by GOES-16 and more will become available as the satellite is checked and its sensors are calibrated. A decision will be made this year as to whether GOES-16 will become

the next GOES-East or GOES-West satellite. GOES-S (what will become GOES-17) is slated to be launched in 2018 and it will eventually take up the remaining position. The final satellite in this series, GOES-T, which will be the backup satellite, is scheduled to be launched in 2020.

What makes the new generation of satellites so special?

A key component in the new generation of satellites is the Advanced Baseline Imager (ABI). The ABI will have will have 4 times higher spatial resolution, be able to produce images 5 times faster and have more than 3 times the number of bands/channels to scan the Earth with than the current operational satellites. What this means for weather forecasters and researchers is a tangible improvement in the ability to track severe storms whether they be thunderstorms, hurricanes or large winter storms. The increased number of bands/channels also means improved ability to track snow/ice cover, vegetation, forest fire smoke plumes, dust, ash and better detection of low cloud and fog both during the day and at night. Lastly, it will provide better and more detailed information to drive computer weather models and

overall climate and environmental monitoring.

Full Earth disk imagery, currently available every 3 hours, will be available every 15 minutes with the GOES-16 satellite. Imagery over the Continental United States (that includes southern parts of Canada) will be available every 5 minutes whereas imagery like this is currently available every 15 minutes. Lastly, special small-scale windows have been created in the United States where imagery could be made available every 30 seconds to 1 minute to track severe storms. While a couple of these windows do provide some coverage in southern Ontario, there is a possibility in future for other windows to be created that cover more of southern Canada. A comparison of full disk imagery from GOES-16 vs the current generation GOES 13 can be found in Figure 2. Figure 3 provides an imagery of North America from GOES-16 from January 15, 2017 showing a large storm system in the American Mid-West.

In addition to the basic imagery, NOAA will also transmit so-called "Level 2 derived products". These make use of data from one or more of the ABI's channels as well as numerical model data to derive ►

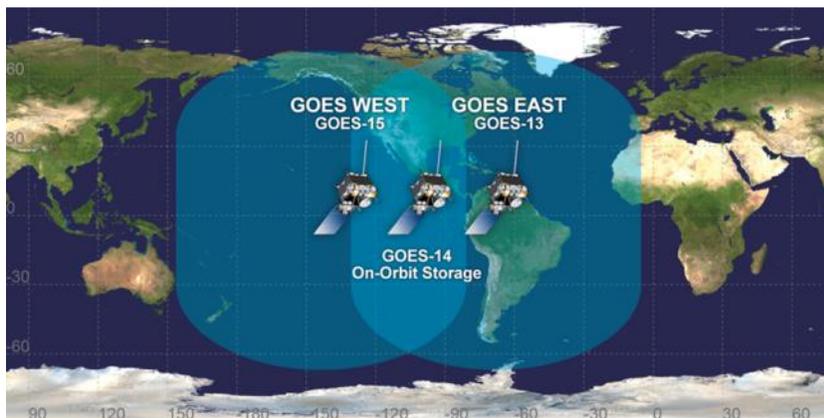


Figure 1: Current GOES satellite configuration (courtesy NOAA).

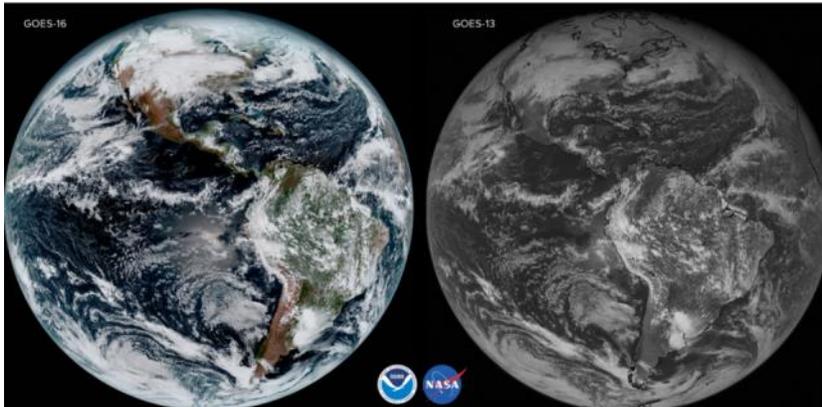


Figure 2: New GOES-16 full disk imagery on the left, current GOES-13 imagery on the right (courtesy NOAA/NASA).

products useful for operational meteorology. These include estimates of precipitation rate, cloud top height, hurricane intensity and detection of volcanic ash, among others. These “value added” products will alert forecasters to the presence and evolution of significant weather-related hazards, leading to more timely and accurate warnings.

Another significant addition to the new satellites will be the Geostationary Lightning Mapper (GLM). The GLM will provide lightning flash information that will include all forms of lightning (i.e. cloud to cloud, in-cloud and cloud to ground). Current surface-based lightning detection systems do a good job detecting cloud to ground lightning but only have about a 10% detection rate for cloud to cloud and in-cloud lightning. While cloud to ground lightning is certainly top of mind for those of us on the ground, the behaviour of cloud to cloud and in-cloud lightning may offer clues as to the development of strong storms.

In many cases, lightning activity begins in a thunderstorm as in-cloud lightning before other types of lightning develop. Research continues in Canada and elsewhere on the phenomenon of lightning jumps. These lightning jumps represent sudden increases in lightning activity that may be an early

indication of an increase in storm intensity that could eventually lead to large hail, damaging winds, flash floods or tornadoes developing from the storm. As the GLM becomes better integrated into the forecasting procedures in Canada, the information it provides combined with ground-based lightning detection and radar, could lead to an increase in lead times for summer severe storms. The GLM will also provide invaluable information to meteorologists/firefighters responsible for tracking wildfire risk and formation/development.

Wrap-up

As has been discussed, the new

generation of geostationary satellites represents a huge leap forward in the information that will be available to forecasters. It will improve the ability to track a variety of storm systems and will provide that information more quickly and with a higher resolution than ever before. In preparing to write this article, we reviewed training material about the new satellites from both American and Canadian meteorologists. A few of these briefings saw the presenter, usually someone who had been a meteorologist for a number of years, express some envy that they would not have the benefit of as many years using the new satellites as their younger colleagues will. The new generation of satellites is seen as a “once-in-a-career” leap forward in technology.

Imagery from the new satellite can be viewed at:
<https://www.nesdis.noaa.gov>

<http://cimss.ssec.wisc.edu/goes/blog/archives/category/goes-16->

or

<http://weather.cod.edu/satrad/exper/>
CT

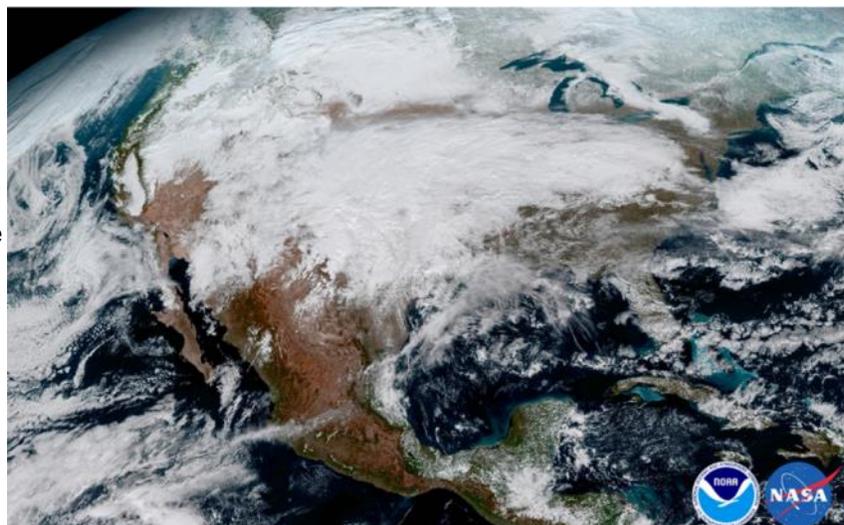


Figure 3: January 15, 2017 visible satellite image from GOES-16 showing large winter storm over American Mid-West (courtesy NOAA/NASA).

Federal disaster mitigation funding “a leap forward”: ICLR ⁶

By Angela Stelmakowich, Editor, Canadian Underwriter

The March 22 federal budget's commitment to create a \$2 billion Disaster Mitigation and Adaptation Fund demonstrates Ottawa's increasing support for disaster risk reduction, suggests Glenn McGillivray, managing director of the Institute for Catastrophic Loss Reduction (ICLR).

“For many years, the federal government has largely been inactive in the area of disaster risk reduction, but in just the last few years alone has come on stronger in promoting resiliency,” McGillivray told Canadian Underwriter.

“[the March 22] announcement shows a seriousness and commitment that we haven't seen before,” he points out. “We hope it is just a start, as there is a lot to do.”

McGillivray is referring to funding noted in the March 22 federal budget.

Specifically, the newly developed, cost-shared fund will be for “built and natural, large-scale infrastructure projects supporting mitigation of natural disasters and extreme weather events and climate resilience,” the budget states.

The funding commitment is “not just a step in the right direction,” McGillivray comments, but “is a leap forward in the move toward building more resilient communities in Canada.”

Details about the fund and timing have yet to be announced.

“For years, groups like ICLR have been doing the research into what resiliency means and what actions are needed to get there. The missing piece, as always, was funding,” McGillivray says.

The hope is that announcement contributes to addressing that gap and, “perhaps more importantly, puts ‘resiliency’ on the map as something not just to talk about,

but to actively work on,” he adds. McGillivray further regards as encouraging the budget's allocation of \$182 million from the Green Infrastructure Fund to implement new building codes to focus on climate resilience.

In February, National Research Council Canada reported that over the next five years it will conduct research and evaluations, as well as risk analyses to “develop new solutions to factor climate resilience into the design of future buildings and infrastructure in Canada.”

“This is also a leap forward as Canada will be among the first in the world to incorporate climate change adaptation formally into its building codes,” says McGillivray.

One of ICLR's goals is “to make the next generation of new homes more resilient to severe weather. Changing the Canadian National Model Code will likely see code changes sift down to the provincial code level, which marks a huge, positive philosophy change in Canada,” he points out.

Moving forward, McGillivray notes that building better structures and making communities more resilient through stronger, more robust critical infrastructure will advance the goal of resiliency. That said, “these measures still leave individuals (for example, private homeowners and property owners) out of the picture,” he contends.

“We can put billions in community resilience and still not see great improvements if nothing is done on the private property side,” McGillivray offers.

“We need programs to educate, inform and financially incent private property owners to invest in making their own properties more resilient,” he emphasizes.

ICLR, a centre for multi-

disciplinary disaster prevention research and communications, was established by Canada's property and casualty insurance industry as an independent, not-for-profit research institute affiliated with Western University.

CT

This article first appeared in Canadian Underwriter (Online edition, March 23, 2017).

2017 wildfire season - May 10

The Institute for Catastrophic Loss Reduction (ICLR) is pleased to invite you to participate in a Forecast of the 2017 Wildfire season with Kerry Anderson, Fire Research Officer for the Canadian Forest Service.

This interactive webinar will summarize the current conditions in Canada and will provide a forecast for the 2017 fire season.

Kerry Anderson is a fire research scientist with the Canadian Forest Service. Dr. Anderson received his B.Sc. in 1985, M.Sc. in 1991 and Ph.D in 2009 at the University of Alberta. His Ph.D. thesis entitled *A Multi-scale Approach to Fire-growth Modelling* examined predicting forest fire growth over a range of scales from hourly to seasonally. His M.Sc. thesis entitled *Models to Predict Lightning Occurrence and Prediction over Alberta* examined the ability to forecast lightning using upper air soundings.

Dr. Anderson is actively involved in research to predict smoke forecasting, fire weather and fire behaviour. Through this research, he has and continues to develop models to assist fire management agencies in daily operational planning by predicting the potential impact of fires on the landscape.

WHEN: May 10, 2017 from 11:30 AM to 12:15 PM

WEBINAR LINK: <https://zoom.us/webinar/register/73a57bb727dd13f37c24e00bf0acd2b8>

2017 hurricane season - May 30

The Institute for Catastrophic Loss Reduction (ICLR) is pleased to invite you to participate in a Forecast of the 2017 Hurricane Season with Bob Robichaud, Warning Preparedness Meteorologist for the Canadian Hurricane Centre.

This interactive webinar will summarize the current conditions in Canada and will provide a forecast for the 2017 hurricane season.

Bob Robichaud received his B.Sc. in meteorology from Lyndon State College, Vermont in 1995. After a few years as a weather forecaster in the private sector, he joined Environment Canada in 1998 as an aviation forecaster in Gander, NL where he eventually became aviation weather program manager for Atlantic Canada.

Robichaud moved to Halifax in 2004 to fill the new warning preparedness meteorologist role in Atlantic Canada where his primary focus is working closely with emergency management officials on a variety of different weather related issues including training, exercising and support during actual weather events.

WHEN: May 30, 2017 from 10:00 AM to 11:00 AM EDT

WEBINAR LINK: <https://zoom.us/webinar/register/106e449891157d8734538d7d4481ef37>

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Mission
To reduce the loss of life and property caused by severe weather and earthquakes through the identification and support of sustained actions that improve society's capacity to adapt to, anticipate, mitigate, withstand and recover from natural disasters.

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