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The Resilience Roundup highlights CIRCA's presence in the news, provides links to recent local/state/national news articles related to resilience and adaptation, and announces upcoming events and seminars.



Resilience Roundup

March 22, 2016

A service of the Connecticut Institute for Resilience and Climate Adaptation (CIRCA)

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- **March 31, 2016 - Urban Planning in the Age of Climate Change:** Symposium sponsored by UConn Urban and Community Studies Program. Free and open to the public.
- **April 4-6, 2016 - Local Solutions: Eastern Regional Climate Preparedness Conference,** Baltimore, MD
- **April 10-13, 2016 - Keeping History Above Water conference** in Newport, RI on threat of sea level rise to historic coastal communities.
- **April 15, 2016 - CIRCA Municipal Resilience Grant Program Round 2:** Applications due April 15, 2016. Up to \$100,000 available.
- **April 15, 2016 - Our Changing Climate - Its Impacts on the Economy and the Way We Live: A Symposium** sponsored by Rockfall Foundation, UConn CLEAR, Connecticut Sea Grant, UConn Extension, and Middlesex Community College
- **April 22, 2016 - Resilience and the Big Picture:** Governing and Financing Innovations for Long Island Sound and Beyond. Register for Symposium. Sponsored by Connecticut Sea Grant and the UConn Center for Energy and Environmental Law.
- **April 29, 2016 - FY2016 FEMA Flood Mitigation Assistance and Pre-Disaster Mitigation Assistance Grant Opportunity Open.**

CIRCA in the News

[March 15, 2016 - Grant helps coastal communities prepare for rising sea levels - WTNH News 8](#)

GROTON, Conn. (WTNH) - When storms hit they can do a lot of damage and researchers at UConn's Avery Point say the damage is greater with rising sea levels.

They have received a grant given out by NOAA the National Oceanic and Atmospheric Administration which is aimed at helping coastal communities be better prepared.

Kay Howard-Strobel is a researcher with CIRCA the Connecticut Institute for Resilience & Climate Adaptation at Avery Point.

She shows News 8 some of the equipment they use to collect data along the shoreline.

"These will be entirely submerged," says Howard-Strobel. "This is a Doppler profiler. It emits pings."

CIRCA received the \$109,000 grant to conduct studies on rising tides.

"A storm event comes through we'll get waves, we'll get the increase in currents, we'll get the increase in surface elevation, changes in temperature, and salinity," explains Howard-Strobel.

The information collected by the instruments is sent to the group's high capacity servers.

"We're using that data to validate our model results," says researcher Todd Fake.

Those models will help them predict how bad storms will be and how frequent they will occur.

"Sea level rise as an impact of climate change and we expect to have increasing sea level rise in the future will make those storms worse because the water level's gonna be higher," says Rebecca French who works with CIRCA.

Her part of this grant is to look at green infrastructure and living shorelines which can help prevent erosion once vulnerable areas are identified. She says dunes like you see at Mitchell

College's beach and plantings help stop erosion.

"The root systems naturally stabilize the shore," says French.

Marshes can also slow down incoming water. Options other than sea walls which will be presented along with shoreline maps to coastal communities.

The group's mission with this grant "Is to help them understand what they're options are," says French.

"One of the reasons the researchers like natural barriers built where they can be is because they allow the ecosystem to also survive.

[March 14, 2016 - Grant will help state's coastal communities prepare for sea storms. The Day](#)

Groton - Detailed maps will be created showing flood-prone areas along the state's coast, and projects will be undertaken to promote understanding and use of natural shoreline landscaping techniques in Connecticut, thanks to a \$109,576 grant from the National Oceanic and Atmospheric Administration.

These efforts, designed to foster resilience in the face of rising sea levels and increasing intensity of coastal storms, will be led by the Connecticut Institute for Resilience and Climate Adaptation, or CIRCLA, based at the University of Connecticut's Avery Point campus. The state Department of Energy and Environmental Protection's Office of Long Island Sound Programs will be a partner with CIRCLA on the projects.

"The maps will be much more accurate, and include the effects on small inlets and water depths, and we'll deploy instruments to check the maps," James O'Donnell, executive director of CIRCLA and professor of marine sciences at Avery Point, said Monday. The new maps, he said, will be more specific and detailed than existing flood inundation maps, and are intended to provide municipal planners, emergency managers and others with a valuable tool to use in their communities. The maps will be made available online and display the effects of a 100-year storm, or one that has a 1 percent chance of occurring in a given year.

The grant, announced Friday, is part of an \$891,423 grant from NOAA to a consortium of New England states and coastal observation agencies. The grant program was highly competitive, according to a CIRCLA news release, with NOAA selecting only 12 grant recipients from among 130 proposals nationwide.

Along with creation of the maps, the grant to CIRCLA will also enable the creation of "real-time" tidal inundation prediction systems.

"It would be specific to an incoming storm," O'Donnell said.

The grant will also fund reports and workshops to educate municipal officials and others about "green infrastructure" - projects that use nature-based approaches to soften the effects of coastal flooding - and help reduce state and federal regulatory barriers to carrying out such projects, said Rebecca French, director of community engagement for CIRCLA.

"We're trying to expand the use of green infrastructure to build resilience, and reduce erosion and impacts of storms and flooding," she said.

"Green infrastructure" can include projects such as dune construction; planting vegetation along sloped areas; protecting and expanding marsh areas that absorb wave energy; and establishing shellfish beds as offshore breakwaters, French said.

The work being supported by the two-year grant will begin in May. The mapping and modeling projects would be the focus of the first year, and the green infrastructure projects would happen

in the second year. A website of the projects will also be created.

CIRCLA will collaborate on its projects with similar ones in Rhode Island, Maine and Massachusetts, O'Donnell said.

Local & State News Clips

[March 15, 2016 - Panel: Finding climate fingerprints in wild weather is valid, CT Post](#)

WASHINGTON (AP) - Climate science has progressed so much that experts can accurately detect global warming's fingerprints on certain extreme weather events, such as a heat wave, according to a high-level scientific advisory panel.

For years scientists have given almost a rote response to the question of whether an instance of weird weather was from global warming, insisting that they can't attribute any single event to climate change. But "the science has advanced to the point that this is no longer true as an unqualified blanket statement," the National Academies of Sciences, Engineering and Medicine reported.

Starting in 2004, dozens of complex peer-reviewed studies found the odds of some extreme events - but by no means all - were goosed by man-made climate change. This new field of finding global warming fingerprints is scientifically valid, the academies said in a 163-page report released Friday. The private non-profit has advised the government on complex, science-oriented issues since the days of President Abraham Lincoln.

When it comes to heat waves, droughts, heavy rain and some other events, scientists who do rigorous research can say whether they was more likely or more severe because of man-made global warming, said academies report chairman David Titley, a Pennsylvania State University meteorology professor. And that matters.

"While we plan for climate, we live in weather," Titley, a retired Navy admiral, said in an interview. "These extremes are making climate real when in fact they are attributable to climate change."

Not all weird weather can be blamed with any degree of certainty on global warming, according to the report.

"For a certain class and type of event there is a human fingerprint," said report co-author Marshall Shepherd, a University of Georgia meteorology professor. The report says there is "high confidence" in studies looking for climate change connections between extreme hot and cold temperatures, such as the Russian heat wave of 2010. There's medium confidence in efforts trying to attribute droughts and extreme rainfall.

Hurricanes and other tropical cyclones, wildfires and severe thunderstorms are on the low end of the confidence range, the report found.

In some cases heat and lack of rain combine and the studies find a viable connection to global warming, such as in the recent four-year California drought and the drought that hit Syria and neighbors, Titley said.

"The fog of uncertainty that obscured the human role in individual events is finally lifting," said Princeton University professor Michael Oppenheimer. He wasn't part of the study, but is on the board of Climate Central, which manages a large climate attribution project.

Good attribution studies are based on what Titley calls a "three-legged stool" of observational records of decades of past events, detailed understanding of the physics that cause the weird weather itself, and sophisticated computer models that simulate the chances of the extreme event if there were no man-made, heat-trapping gases warming the atmosphere.

"It's just like an autopsy," said Martin Hoerling, a National Oceanic Atmospheric and Administration research meteorologist who has conducted several attribution studies, finding a climate change connection in some events and not finding a link in others. "We're following the data wherever it goes."

Titley said attribution studies are "based in physical science and statistics that don't value Republicans or Democrats. The ice just melts. This has nothing to do with politics."

These studies don't say an event was 100 percent caused by climate change. They usually say chances were increased by a certain fraction.

Katharine Hayhoe, a Texas Tech climate scientist who wasn't part of the study, praised the work: It is "very important to clarify to people how no event is black or white: No individual weather event can be said to be 'solely' human nor 'solely' natural any more. They are somewhere on the sliding scale between."

But other scientists don't like the idea of looking at single events.

Climate change caused by man "has fingerprints in every weather event we experience today," wrote Oklahoma University meteorology professor Jason Furtado, who wasn't part of the study. "Disentangling the contribution of climate change with natural variability for a single event is not fruitful or currently possible in my opinion."

Eventually, Titley hopes, the science of climate change fingerprint detecting will advance so that meteorologists can make testable forecasts of a certain number of extreme events in a season.

[March 11, 2016 - Salt marsh advancement, sea level rise focus on Old Lyme talk, CT Post](#)

Old Lyme - Natural resources, such as salt marshes, can act as "natural infrastructure" that prevents and minimizes risk to both people and property in coastal communities, said Adam Whelchel, the director of science for The Nature Conservancy in Connecticut.

Salt marshes are not only important ecologically, but they also ameliorate flooding along the shoreline by absorbing water and dissipating wave energy, he said.

At a workshop Friday morning, Whelchel encouraged about 40 town officials and residents to consider both where salt marshes are today and the potential for them to creep up on the landscape in the future in the face of rising sea levels.

The workshop on sea level rise and salt marsh advancement was held by the Old Lyme Open Space Commission at Town Hall.

During the presentation, Whelchel pointed to maps of projected salt marsh advancement and critical parcels in Old Lyme at the mouth of the Connecticut River.

The Nature Conservancy had partnered with the University of Connecticut to develop a salt marsh advancement model for the state's two dozen coastal communities.

By the 2080s, the salt marsh advancement zone is projected to encompass 936 acres in Old Lyme, he said.

The analysis splits that land into two categories: suitable land that could support future salt marshes and unsuitable land, which already is built out with roads, parking lots, buildings or other infrastructure.

About 812 acres would be suitable for future salt marshes, while the remaining 124 acres would not.

These 124 acres of current development "will likely be in direct conflict with daily tides and advancing marshes in the future," according to the presentation.

About 18 percent of the 812 acres of land suitable for salt marsh advancement already is protected as open space, but the remaining 82 percent is unprotected.

These "unprotected parcels will play a vital role in maintaining Old Lyme's salt marsh resources in the future," according to the presentation.

Whelchel said the Nature Conservancy has held community resilience building workshops with 35 communities in Connecticut.

At the workshops, participants discuss improvements in the categories of infrastructure, social resources, such as sheltering capacity, and the environment.

He said open space always comes up as a benefit to reduce communities' risk.

During the workshop, First Selectwoman Bonnie Reemsnyder said the town is working with the Environmental Committee of the First Congregational Church to collaborate to put together forums in June on climate change and sea level rise.

Open Space Commission Chairwoman Diana Atwood Johnson said in an interview after the meeting that the commission has taken a list of the critical parcels.

She said the commission is very interested in parcels abutting existing protected space, which allow for water flow and help provide greenways.

She pointed out that having more natural habitat can help mitigate flooding, as salt marshes act as sponges to absorb water.

Overall in Connecticut, projected salt marsh advancement by the 2080s encompasses a total of 23,929 acres, according to the presentation.

About 71 percent of that land would support future salt marshes, but the other 29 percent would not.

A tool for viewing maps of potential sea level rise and flooding from major storms is available at www.coastalresilience.org, said Whelchel.

[March 5, 2015 - New Haven Climate Movement officially launches March 8, invites participation. New Haven Register](#)

NEW HAVEN >> Being a climate activist can be fun, creative and exciting.

That's the message of the New Haven Climate Movement, set to launch officially March 8.

"We want to be a fun, creative presence in climate action," said Sarah Ganong, a communications coordinator for Connecticut Fund for the Environment/Save the Sound, and one of the founders of New Haven Climate Movement. "The biggest thing that we want is everyone in the city to be a stakeholder in the process."

One way to get more people involved in climate activism is to create a space where people don't need to be climate change experts to participate, Ganong said.
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The new group wants to help make climate change science accessible and understandable to the community, she added. This will include art projects throughout the city that spread awareness in a more creative way.

One idea in particular, Ganong said, may involve drawing a chalk line through the city where tides are expected to reach in 50 years as a result of sea-level rise - a direct effect of the warming planet, scientists argue.

Aside from sea-level rise, New Haven faces the effects of other aspects of climate change, including an influx of climate refugees and extreme weather, Ganong said.

"This is real and we have to do something about it," said Ceyda Durmaz of the New Haven/Leon Sister City Project. Durmaz is another founding member of the New Haven Climate Movement. "In order to get (City Hall) to spend money on these issues, we have to bring more people in."

Another driving force behind the creation of this movement, Ganong and Durmaz explained, was wanting to appeal to more New Haven residents to get involved in climate activism. Both women have been working for years in climate advocacy in New Haven, and they said it was time to start appealing to a wider audience and get more people involved in advocacy.

"We're doing this to reach more people," Durmaz said. "It helps to involve different types of people."

Both Ganong and Ceyda were confident that New Haven is willing to develop climate action plans that help reduce greenhouse emissions in the city. A letter to Mayor Toni Harp in January from more than 30 organizations calling for an updated climate action plan for the city was well-received, Ganong said.

"We've met with city officials in initial meetings so far and are pleased with the results. Looking forward to continued dialogue in the coming months," Ganong said.

While the New Haven Climate Movement is taking a more artistic approach, with plans for art projects to be created in public spaces to educate people about climate change, Ganong said the movement is not open only to artists.

"We're grass-roots artists on climate change," Ganong said. "I don't want my activism to feel like work all the time."

The official launch of the New Haven Climate Movement will be from 5:30 to 7:30 p.m. in the back room of BAR, 254 Crown St. Those interested in attending can visit the group's Facebook page for more details: www.facebook.com/newhavenclimatemovement.

One byproduct of the kickoff event: painting and creating climate action signs that depict a future New Haven worth striving for. These signs can later be used when members of the movement attend public meetings or forums and at climate marches, Ganong said.

National News Clips

[March 15, 2016 - Louisiana's vanishing island: the climate 'refugees' resettling for \\$52m. The Guardian](#)

Wenceslaus Billiot, an 88-year-old native of Isle de Jean Charles, Louisiana, remembers growing up on a much different island than the two-mile sliver of his ancestral home that remains today.

"When I was a kid I used to do trapping in the back," he said, gesturing towards the back of the small, one-story house that stands elevated on stilts to escape the floods that roll in from the bayou after nearly every storm. "You could walk for a long time. Now, nothing but water."

The back balcony overlooks a vast expanse of water leading to Terrebonne Bay and, further, the

Gulf of Mexico - that now lies in his backyard.

Billiot and his equally sprightly 91-year-old wife, Denecia Naquin, are among the last remaining residents of this island, which has lost 98% of its land and most of its population to coastal erosion and rising sea levels since 1955. The population, which peaked at around 400, is now down to around 85.

As in other areas of southern Louisiana, the loss of once-vast tracts of marshland and trees has left the island exposed to hurricanes and frequent flooding has stripped the land, made farming impossible and forced residents into an annual ritual of rebuilding.

The couple, like nearly everyone on the island, belong to the Biloxi-Chitimacha-Choctaw tribe, and can trace their roots to the early 1800s when Native Americans fleeing forced relocation under the Indian Removal Act first settled the island. The tribe was quickly intertwined with the local French Cajun influence, which can still be heard in the lilting accent of Billiot and Naquin's generation.

Billiot recalls going to school in a pirogue, a traditional Cajun boat. His wife once grew vegetables and kept chickens in the backyard. Today, it's hard to imagine cattle roaming this scraggly, narrow patch of land, as they once did when the island was much larger.

"If my grandparents would have been here now, they would say 'Oh, lord'," imagined Billiot, shaking his head.

Now, with new federal funding, the Isle de Jean Charles tribe will be part of the first program in the lower 48 states to address an entire community's resettlement needs due to climate change and increased natural disasters.

"If it passes a hurricane, it's gonna wash everything away," said Billiot. "That's why they want us to move." His skin is weathered from a life spent on the water, first as an oyster fishermen then as a tugboat captain. The couple is clearly reticent to leave. "We'll stay here as long as we can," added Denecia with a polite smile.

In January the tribe was awarded \$52m for resettlement from the Department of Housing and Urban Development, as part of its \$1bn Natural Disaster Resiliency Competition. The money will fund a new sustainably designed development to provide housing to up to 400 tribe members on a new plot inland. Planning is in the early stages, but officials hope to choose a site likely somewhere north of Houma, the closest city, later this year.

[Continued...](#)

[March 14, 2016 - Rising Sea Levels May Disrupt Lives of Millions, Study Says, The New York Times](#)

Sea-level rise, a problem exacerbated by greenhouse gas emissions, could disrupt the lives of more than 13 million people in the United States, three times the most current estimates, according to a study published Monday.

Rising seas, which already endanger coastal communities through tidal floods and storm surges, could rise three feet or more over the next century if emissions continue at a high level, threatening many shoreline communities. The study, published in Nature Climate Change, argues that most projections vastly underestimate the number of people at risk because they do not account for population growth.

For the study, the authors combined future population estimates with predicted sea-level rise, using data from the National Oceanic and Atmospheric Administration, to demonstrate that millions are at risk: 4.2 million if seas rise by three feet, or 13.1 million with a six-foot increase, a high-end estimate.

Mathew E. Hauer, one of the study's authors and a doctoral student in geography at the University of Georgia, said, "We could see a huge-scale migration if we don't deploy any protection against sea level rise."

Recent studies have shown that the sea levels are rapidly increasing, probably at the fastest rate in 28 centuries, and its accompanying tidal flooding, increasingly frequent, is already causing headaches in low-lying places, especially in the South. Though sea levels have risen and fallen significantly in the past, scientists say they have been fairly constant for the last several thousand years.

Mr. Hauer and his co-authors also found a highly regional effect of sea-level rise. Of the projected population at risk, nearly 50 percent will be in Florida, and an additional 20 percent in other parts of the Southeastern United States. In 30 counties, more than 100,000 people would be at risk if the sea level rose by about six feet.

None of the 22 coastal states in the continental United States, as well as Washington, D.C., will be immune from the effects of sea-level rise, the authors predict. If the seas were to rise by about six feet by 2100, more than one million people in California, and almost as many in New York and New Jersey, would be affected, the study shows.

The researchers estimated that the cost of relocating the 13.1 million people displaced by sea-level rise would be \$14 trillion, based on relocation estimates for residents of Alaskan coastal villages.

Mr. Hauer said the study could be useful on a local policy level as well.

Predictions for sea-level rise are often done on a very small scale, while population forecasting is often done at a county or state level, Mr. Hauer said. Using census data, Mr. Hauer and his co-authors grouped units similar to city blocks to develop their forecast, and assumed that housing development patterns would continue at the same rate.

Benjamin H. Strauss, an expert on sea-level rise at Climate Central, a climate change research organization, said he believed that the new study overstated the number of people at risk, though he agreed that most estimates were too conservative.

The continuation of "current development patterns through the rest of the century seems like an unlikely future," Dr. Strauss said, "because as sea levels continue to rise and coastal problems become glaringly obvious, coastal development and real estate will have to change."

Dr. Strauss also said this flooding model lacked some of the nuance shown in other studies on sea-level rise. Different parts of the country will see different levels of sea-level rise at certain moments in time, he said: Coastal Louisiana and the Chesapeake region will see faster rates of change since the land there is also sinking, for example.

Another study published Monday in *Nature Climate Change* also highlighted the need for modeling that takes into account how different landscapes will react to sea level rise. The study, conducted by several members of the United States Geological Survey and a researcher from the Goddard Institute at NASA, demonstrates that several ecosystems in the Northeast, such as marshes and beaches, may adapt to sea-level rise, possibly undergoing formal changes. Developed or urban areas are more likely to flood or become submerged because of their hardened shorelines.

Erika E. Lentz, the report's lead author and a research geologist with the United States Geological Survey, also said most places would not see the degree of inundation predicted in Mr. Hauer's study.

Mr. Hauer, a demographer, said he was not making any predictions about the likelihood of certain sea-level scenarios, but was instead focused on the effects on people.

All three scientists acknowledged the degree of uncertainty in any of these forecasts. "We don't

have anything to compare this to," Mr. Hauer said. "We just don't know how people are going to act."

[March 10, 2016 - Atmospheric carbon dioxide levels are showing a startling increase. The Washington Post](#)

Atmospheric carbon dioxide concentrations have spiked more in the period from February 2015 to February 2016 than in any other comparable period dating back to 1959, according to a scientist with the National Oceanic and Atmospheric Administration's Earth System Research Laboratory.

The change in average concentrations from February of last year to February of this year was 3.76 parts per million at the storied Mauna Loa Observatory in Hawaii, leaving the concentration at 404.02 parts per million for February, based on preliminary data.

Pieter Tans, lead scientist of NOAA's Global Greenhouse Gas Reference Network, confirmed that the increase, reported previously by New Scientist, represented a record year-over-year growth for Mauna Loa. He also said that in addition to the stark rise in carbon dioxide levels over the past year, researchers have now observed four straight years of increases of more than 2 parts per million in the atmosphere.

"We've never seen that," Tans said. "That's unprecedented."

Indeed, the average annual increase during 2015, of 3.05 parts per million of carbon dioxide at Mauna Loa, was also the highest in the record, according to NOAA - exceeding the previous record of 2.93 parts per million in 1998, which was also a strong El Nino year.

Pre-industrial levels of carbon dioxide were just 280 parts per million, rather than over 400 right now - and when the measurement record began at Mauna Loa in the late 1950s, were below 320 parts per million. So we have come a very long way, and very fast.

Tans said the reason is very clear: Rates of fossil fuel burning remain at historically high levels, releasing 10 billion metric tons of carbon into the atmosphere annually. "The emissions are at a record high, therefore the growth rate of atmospheric CO₂ is also at a record high," he said.

However, there also appears to be a role for the El Nino phenomenon in the records this year. "CO₂ tends to rise much faster during and just following El Niño events," wrote Ralph Keeling, director of the Scripps Institution of Oceanography carbon dioxide program and son of Charles David Keeling (after whom the iconic graph of rising greenhouse gas concentrations is named), last October. At the time, Keeling forecast that because of the current El Nino event, we would probably never see CO₂ levels decline below 400 again "in our lifetimes."

In that post, Keeling also explained why CO₂ goes up so much during El Nino. It's because of the way the phenomenon tends to drive droughts across the tropics, which in turn leads forests, like those in Indonesia, to lose carbon in wildfires - which happened at a massive scale in 2015. Drought also stunts forest growth, which leads to less carbon dioxide removal from the atmosphere, Keeling wrote.

[Continued...](#)

[March 7, 2016 - Global warming already driving increases in rainfall extremes. Nature](#)

Get ready for rain: climate change is already driving an increase in extremes of rainfall and snowfall across most of the globe, even in arid regions. And this trend will continue as the world warms, researchers report today in Nature Climate Change.

The role of global warming in unusually large rainfall events in countries from the United

Kingdom to China has been hotly debated. But the latest study shows that climate change is driving an overall increase in rainfall extremes¹.

"In both wet and dry regions, we see these significant and robust increases in heavy precipitation," says Markus Donat, a climate scientist at the University of New South Wales in Sydney, who is the study's lead author.

Warm air holds more moisture, and previous research has found that global warming is already increasing the odds of extreme precipitation events. But climate models typically differ as to how that might play out at regional scales. Some models suggest that dry areas could become drier, but the new findings confirm that this rule does not hold over land; some areas see declines, but most get wetter.

"The paper is convincing and provides some useful insights," says Sonia Seneviratne, a climate scientist at the Swiss Federal Institute of Technology in Zurich. "What is particularly new in this article is the demonstration of such a signal for observed changes in dry regions."

Donat and his team defined as 'extreme precipitation' as the maximum rainfall or snowfall seen in a single day and collected data on this from some 11,000 weather stations from 1951 to 2010. The team identified areas that were wetter and drier than the global average, and then tracked changes in daily precipitation events as well as cumulative annual precipitation in those areas.

"In both wet and dry regions, we see these significant and robust increases in heavy precipitation"

Their results suggest that both annual precipitation and extreme precipitation increased by 1-2% per decade in dry regions, including western North America, Australia and parts of Asia. Wet areas, including eastern North America and southeast Asia, show similar increases in the size of extreme precipitation and smaller increases for annual totals.

The team then compared the observations to climate simulations that were developed for the Intergovernmental Panel on Climate Change's fifth assessment report. Global climate models have a hard time simulating extremes, and at the local and regional scale they often tell different stories, Donat says. To address this problem and identify consistent precipitation patterns, the team focused on how wet and dry areas change within each individual model as the climate warms. Although the models might differ from one another as to how and where rain and snow falls, each exhibited the same trends within its own simulated climate: as temperatures rise, extremes of precipitation increase in both the wettest and driest regions.

"We have a really good agreement between the observations and the models," Donat says.

[Continued...](#)

Announcements

[CIRCA Blog Posted: Current Policies on Sea Level Rise in Connecticut](#)

By Rebecca French, Director of Community Engagement CIRCA and Maya Thompson CIRCA 2015-2016 Undergraduate Intern

CIRCA is often asked, "What number should I be using for sea level rise for planning in my town?" There are many sea level rise planning tools available that are appropriate for education and awareness-raising and first-pass planning, but there also many factors that limit the accuracy of these planning tools for decisions at the local infrastructure scale. These factors are discussed in a previous blog post, "Interactive Mapping Tools for Sea Level Rise and Storms: A Review and User Guide." In this post, we are discussing what the state of Connecticut currently has on the policy books about sea level rise.

At this point, the State's answer to "what's the number?" is a reference in PA 13-179, An Act Concerning the Permitting of Certain Coastal Structures by the Department of Energy and Environmental Protection. The Act references the NOAA CPO-1 report published in December 2012 entitled, "Global Sea Level Rise Scenarios for the United States National Climate Assessment." The Act requires that the state plan of conservation and development, municipal plans of conservation and development, the civil preparedness plan and program, and the municipal evacuation or hazard mitigation plans must "consider" the sea level change scenarios from the NOAA report. In the plan of conservation and development, OPM must consider the risks from increased coastal erosion from sea level changes on infrastructure and natural resources and make recommendations for siting future infrastructure and development that minimizes use of erosion-prone areas. The current state plan of conservation and development expires in the year 2018, therefore, these changes will impact the revision of for the 2019-2023 plan. PA 13-179 further defined a "rise in sea level" under the coastal management act as the average of the most recent equivalent per decade rise according to NOAA's Bridgeport and New London tide gauges. PA 13-179 also charged the University of Connecticut (UConn) Department of Marine Science to update the NOAA projections every 10 years. In the next year, the Connecticut Institute for Resilience and Climate Adaptation (CIRCA) will determine sea level rise statistics for the state of Connecticut.

[Continued...](#)

[Living Shorelines Site Suitability Model Released](#) by UConn as part of partnership between NOAA, UConn College Agriculture, Health and Natural Resources, Connecticut Sea Grant, UConn CLEAR, UConn CIRCA, and CT DEEP

Living Shoreline Site Suitability Model

In an attempt to improve coastal resilience in Connecticut, this study developed an automated geospatial model, which determines the suitability for various living shoreline methods along Long Island Sound in Connecticut. Living shorelines are nature-based shoreline protection strategies, which also enhance natural habitat and ecosystem services. The model uses coastal conditions and site characteristics to determine stretches of coastline suitable for living shorelines. The model takes into consideration system, hydrodynamic, and terrestrial parameters such as erosion history, fetch, and bathymetry, respectively, as well as presence of beach or marsh. Layers are reclassified to living shoreline design guidelines, and then combined to design standards to produce binary suitability results. Outputs from the geospatial model include Beach Enhancement, Marsh Enhancement, as well as hybrid design options which include Offshore Breakwaters and Marsh with Structures. The model is a crucial first step for environmental planners, homeowners, environmental engineers, and consultants in considering options for shoreline protection alternatives to shoreline hardening.

See the living shorelines design options for Connecticut:

<http://s.uconn.edu/livingshorelinestool>

For more information, please e-mail Jason Zylberman: jason.zylberman@uconn.edu

Partners:

National Oceanic and Atmospheric Administration (NOAA), Connecticut Sea Grant (CT Sea Grant), Center for Land Use Education and Research (CLEAR), Connecticut Institute for Resilience & Climate Adaptation (CIRCA), and Connecticut's Department of Energy and Environmental Protection (DEEP)

Material is based upon work supported by NOAA through Coastal Resilience "CRest" grant titled "Enhancing Coastal Resilience in Connecticut" and UConn's College of Agriculture, Health and Natural Resources. Extended funding was provided by Connecticut Sea Grant. Research presented is also towards partial fulfillment of the requirements for the Master of Science degree at the University of Connecticut. Special thanks to Dr. Daniel Civco (University of Connecticut, NRE), Dr. Juliana Barrett (CT Sea Grant & CLEAR), and Emily Wilson (CLEAR) for providing guidance as academic advisors for this research project.

[CIRCA Municipal Resilience Grant Program webinar slides posted here](#) and [download a recording here](#)

Abstract:

CIRCA Director of Community Engagement, Rebecca French and Program Manager, Jessica LeClair gave a webinar presentation on how to apply for the Municipal Resilience Grant Program (MRGP). The presentation walked through the required application materials and process, provided descriptions of the Round 1 MRGP recipient projects, and provided an overview of climate impacts on Connecticut's municipalities. After the presentation, CIRCA staff were available to answer questions.

[March 28, 2016 - Free Webinar: Measuring and Implementing Resilience: The New LEED Design Pilot Credits. 12-1pm. Register.](#) Sponsored by UConn CIRCA, Stamford2030District, and CT Green Building Council

Measuring and Implementing Resilience in Buildings: The New LEED Resilient Design Pilot Credits

FREE Webinar

March 28 at 12pm

Webinar Address: [https://uconn-cmr.webex.com/uconn-cmr/onstage/g.php?](https://uconn-cmr.webex.com/uconn-cmr/onstage/g.php?MTID=e5fd6a6ab98fa0a9ad2f4a4b2ddc8e26a)

[MTID=e5fd6a6ab98fa0a9ad2f4a4b2ddc8e26a](https://uconn-cmr.webex.com/uconn-cmr/onstage/g.php?MTID=e5fd6a6ab98fa0a9ad2f4a4b2ddc8e26a)

Dial-in: US Toll +1-415-655-0002 (toll free audio through computer); Access code: 643 588 570

Sponsored by CIRCA, Stamford 2030 District, and the CT Green Building Council

Speakers: Mary Ann Lazarus, FAIA LEED AP BD+C and Betsy del Monte, FAIA, LEED BD+C

With the advance of climate change and intensification of natural disasters, resiliency is becoming increasingly important to cities and communities, especially in building design and construction. This seminar will examine what makes a place resilient and how resilience can be implemented in building design. It will cover three new pilot credits which give specific metrics for design teams to incorporate into the planning and design for natural hazards and vulnerabilities including functionality of buildings in the event of interruptions in power or heating fuel.

[March 31, 2016 - Urban Planning in the Age of Climate Change:](#) Symposium sponsored by UConn Urban and Community Studies Program. Free and open to the public.

12pm-2:30pm

UConn Greater Hartford Campus

School of Social Work Building

Zachs Community Room

Trout Brook Drive/Asylum Avenue, West Hartford, CT

Keynote:

- Karl-Ludwig Scheibel, Senior Fellow climate Alliance of European Cities

Panel:

- Rebecca A. French, Ph.D., Director of Community Engagement, UConn Connecticut Institute for Resilience and Climate Adaptation
- Brian Garcia, MBA, MPA, MEM, President and CEO Connecticut Green Bank
- Robert Klee, Ph.D., J.D. Commissioner Department of Energy and Environmental Protection

- Lynn Stoddard, MCP, Director, Institute for Sustainable Energy, Eastern Connecticut State University

[April 22, 2016 - Resilience and the Big Picture: Governing and Financing Innovations for Long Island Sound and Beyond. Register for Symposium.](#)

Sponsored by Connecticut Sea Grant and the UConn Center for Energy and Environmental Law.

When:

Friday, April 22, 2016

8:00 am to 5:00 pm

Where:

Reading Room

William F. Starr Hall

45 Elizabeth St.

Hartford, CT 06105-2290

Description:

Resilience and the Big Picture: Governing and Financing Innovations for Long Island Sound and Beyond symposium presentations and discussions aim to explore the policy and legal challenges of planning, implementing and financing resilient futures on both sides of the high tide line as well as the complexities of distributing and coordinating the governance of shared resources among multiple authorities, with a focus on marine spatial planning efforts.

Sponsored by Connecticut Sea Grant and UConn Center for Energy and Environmental Law.

RSVP requested by April 19, 2016: <https://www.law.uconn.edu/calendar/events/rsvp-resilience-and-big-picture-symposium>

Contact:

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Dr. Syma Ebbin

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[April 29, 2016 - FY2016 FEMA Flood Mitigation Assistance and Pre-Disaster Mitigation Assistance Grant Opportunity Open.](#)

FY 2016 Grant Opportunity Announcement

Flood Mitigation Assistance (FMA) and Pre-Disaster Mitigation (PDM)

Application period: 3/15/2016 - 4/29/2016. Sub-applications must be received by the state via e-grants no later than 3pm on April 29, 2016. Paper or email applications cannot be accepted.

All Sub-Applicants applying for FMA must have a FEMA approved local hazard mitigation plan in place no later than April 29th to be eligible to apply for project funding.

To Apply: Eligible applicants must apply for funding through the Mitigation e-Grants system on the FEMA Grants Portal, accessible at <https://portal.fema.gov>

Applications for funding are reviewed on a nationally competitive basis and there are limited funds available for these programs. Applications whose main focus is in line with Federal priorities have the best chance of being funded.

Pre-Disaster Mitigation (PDM):

Eligible Sub-Applicants:
State and Local Governmental Agencies
Indian Tribal Governments
Eligible Activities:
Mitigation Planning

Priorities:

1. Multi -Jurisdictional Local Natural Hazard Mitigation Plans (NHMP's). Up to \$300,000 can be awarded per multi NHMP.
2. Single-Jurisdictional Local Natural Hazard Mitigation Plans (NHMP's). Up to \$150,000 can be awarded per single jurisdictional NHMP.

For more information about e-Grants, go to:

<http://www.fema.gov/mitigation-egrants-system-0>

Flood Mitigation Assistance (FMA):

Provides funds to eligible sub-applicants to reduce or eliminate risk of flood damage to buildings insured under the National Flood Insurance Program (NFIP). Federal priorities are to mitigate severe repetitive loss (SRL) and repetitive loss properties (RL).

Eligible Activities Include:

Property acquisition and Structure Demolition
Structure Elevation
Dry Flood-proofing (Non-residential and Historic residential structures only)
Minor Localized Flood Reduction Projects (that primarily benefit NFIP insured structures)
Mitigation Re-construction

Further information on FMA and PDM can be found on www.grants.gov

For FMA please contact Emily Pysh, State Hazard Mitigation Officer, emily.pysh@ct.gov
For PDM please contact Gemma Fabris, Deputy State Hazard Mitigation Officer, gemma.fabris@ct.gov



The *Resilience Roundup* highlights CIRCA's presence in the news, provides links to recent local/state/national news articles related to resilience and adaptation, and announces upcoming events and seminars.

The Connecticut Institute for Resilience and Climate Adaptation's (CIRCA) mission is to increase the resilience and sustainability of vulnerable communities along Connecticut's coast and inland waterways to the growing impacts of climate change and extreme weather on the natural, built, and human environment. The institute is located at the University of Connecticut's Avery Point campus and includes faculty from across the university. CIRCA is a partnership between UConn and the Connecticut Department of Energy and Environmental Protection (CT DEEP).

circa.uconn.edu

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