ICCI 2015 Annual Report

Summary

Alongside projects demonstrating the potential of short-lived climate pollutants to slow cryospheric warming, "Cryosphere 2015" -- making the Paris climate agreement as ambitious and realistic as possible -- was ICCI's chief focus in 2015. "Realistic" in cryosphere terms however refers not to political realism, but the realism of the cryosphere response to warming, which will result in irreversible changes to the Earth system. As Paris neared, Cryosphere 2015 became an ever-broadening coalition of senior scientists and policy makers committed to making that choice clear, not only in private science-policy discussions, but publicly through the groundbreaking "Thresholds Report," released just prior to COP-21.

The cryosphere message broke through in Paris, but current commitments fall drastically short of what is needed. A lasting legacy of Cryosphere 2015 is a robust partnership between this stronger group of scientists and policymakers, committed to working together until the goal of real action to halt cryosphere climate change becomes a reality.

Specific Achievements

Cryosphere 2015

Cryosphere 2015, kindly supported by the Flora Foundation was a two-year science-policy effort aimed at gaining greater ambition for the Paris Agreement. Negotiations lacked a realistic picture of the frankly dire implications of cryosphere impacts at temperatures previously thought of as "safe": namely, the so-called "2-degree goal," meaning 2 degrees above pre-industrial temperatures. The IPCC's Fifth Assessment, and even more so cryosphere research since that time, made clear however that even 2 degrees was highly dangerous; yet, policy makers seemed unaware of the scale of these risks. (Greater detail on Cryosphere 2015's first year, for example at the New York Climate Summit and European Parliament can be found in the 2014 Annual Report.)

Efforts expanded in 2015. Presentations by ICCI took place in New Delhi, India; Ottawa, Canada; Kathmandu, Nepal; Paris, France; Bangkok, Thailand; St. Petersburg, Russia; La Paz, Bolivia; Geneva, Switzerland; and Washington, DC. ICCI also briefed an off-the-record, two-day meeting of European journalists in Rome in advance of the Paris summit. ICCI's European Director addressed the closed foreign ministers' segment of the Arctic Council GLACIER Summit in Anchorage, Alaska on August 31, appearing alongside the White House Science Advisor.

Larger ICCI seminars took place at UNFCCC venues. At the June 2015 Bonn negotiations, the concept of these cryosphere dynamics as "irreversible" was introduced to negotiators and media for the first time, drawing extensive coverage. The briefings were especially important in highlighting the first consensus research on greenhouse gas emissions from permafrost, newly projected to equal those of the United States. ICCI also was deeply involved in advocating for an IPCC Special Report on these cryosphere risks, drafting together with Woods Hole Research Center a proposal that eventually was put forward officially by the United States at the October 2015 IPCC meeting (and approved by the IPCC in early 2016 as a special "Oceans and Cryosphere" report).

Nevertheless, as pledges became more concrete it became clear these commitments fell far short of the cryosphere reality or "imperative." Instead, while occurring over vast stretches of time, changes in the cryosphere would not only become triggered, but unstoppable in their impacts on the Earth's climate system and ecosystems at the pledge levels coming to Paris. The only way to halt or reverse these dynamics would in most cases, require a return to temperatures *below* pre-industrial: in other words, induction of a new Ice Age. Especially dangerous dynamics include:

-- Near-complete loss of all mountain glaciers outside high polar regions;
-- Loss of portions of the West and East Antarctic ice sheets and most of Greenland, carrying slow (hundreds to thousands of years) but unstoppable sea-level rise of a minimum 8-25 meters;
-- Loss of Southern Ocean and high north Atlantic/Pacific fisheries, marine ecosystems, and species to acidification;
-- Permafrost thaw and related release of additional greenhouse gases;
-- Complete annual loss of summer Arctic sea ice and its cooling effect from reflective ice and snow.

As Paris drew closer, it became clear that this message needed to reach a wider audience, resulting in the "Thresholds Report." Titled "*Thresholds and Closing Windows: Risks of Irreversible Cryosphere Climate Change*," and released online the week before COP-21, "Thresholds" clearly and soberly defined these risks for global leaders and policy makers. It analyzed the Paris commitments, or "Intended Nationally-Determined Contributions," and found these would clearly allow the five thresholds – and perhaps others – to be crossed permanently, in some cases already by 2030. In a Forward signed by, among others former IPCC co-chair Jean-Pascal van Ypersele of Belgium, and the head of the very first UNFCCC Conference of Parties, Bo Kjellén of Sweden, the Report states that, "Slow to manifest itself, once triggered [cryosphere climate change will] inevitably force the Earth's climate system into a new state, one that most scientists believe has not existed for 35-50 million years."

A November discretionary grant from the Oak Foundation allowed even wider distribution and activities surrounding the "Thresholds" release. ICCI hosted a booth

inside the Paris negotiating venue for the entire two-week period, holding daily lunchtime briefings with cryosphere researchers. ICCI directly or indirectly sponsored the participation of over a dozen of these leading scientists in the Paris meetings, organizing three side events in the Nordic Pavilion, on Dec. 1 (with the Scientific Committee for Antarctic Research, SCAR) and Dec. 4 (two events, one also focused on black carbon from open burning); speaking at three other events; and most important, on December 9 organizing a UNFCCC side event and two media briefings in connection with the release of the printed Report, as negotiations reached their final stages. As part of that final push, ICCI together with two dozen "Threshold" scientists signed a call to action published in *The Guardian* newspaper on December 9, which was widely distributed in Paris; and continues to be spread online by climate scientists and activists.

Coverage of the various events related to Thresholds, from its November 28 virtual release to the December 9 print release, was extensive and occurred in virtually every major global media outlet, including the *Washington Post, New York Times, AFP* and *The Guardian* to French and German-language meda; to more local outlets, TV and radio programs.

Far more important than media coverage however, was the manner in which the "Thresholds" message clearly began to be reflected in the public statements of global leaders and negotiators, from U.S. President Obama and Secretary Kerry, to the leaders of small island states threatened by irreversible sea-level rise, to UNSYG Ban Ki-moon; sometimes with phrases lifted nearly verbatim. In the negotiations and Agreement, "Thresholds" also had a clear impact, especially in the Preamble. It reportedly was frequently cited in the closed-door negotiations as reason to maintain the 1.5 (rather than 2.0) degree goal; for including interim reviews to strengthen pledges, including making certain the first occurred already in 2020; and particularly, in the request to the IPCC to report back, by 2018, on the need to make a 1.5 degree goal the reality. That report will be coordinated by the same newly-elected IPCC co-chair who moderated the ICCI-SCAR side event on December 1.

While a more ambitious climate agreement, aimed at 1.5 degrees from the outset, would be preferable (and far safer), these new components to the Paris Agreement ultimately may still allow us to reach that critical goal, as the full implications of the "cryosphere imperative" for global society become ever more compelling and clear. A lasting Cryosphere 2015 legacy will also be the new and extensive coalition of scientists who participated in Thresholds, virtually all of whom have asked that ICCI's efforts continue as part of the effort to bring the Paris Agreement – now flexible enough to allow frequent amendment – into line with the clear scientific mandate. Pending approval by its Board, ICCI – originally envisioned as a five-year initiative -- will be there to ensure this mandate becomes a reality: in 2020, when the Paris Agreement comes into force.

SLCP Demonstration Projects to Slow Cryosphere Warming:

Alongside the push towards Paris, ICCI to continue work on a practical level to develop new projects aimed at reductions in black carbon and other short-lived climate pollutants, an important corollary to CO_2 reductions that hold special promise for mitigation of climate change in cryosphere. In 2015 these focused on agricultural open burning near the Arctic, Andes and Himalayas; and heating stoves, primarily wood stoves but also stoves using coal in Eastern Europe and many nations near the Himalayas.

Based on a grant from the Nordic Council of Ministers, ICCI further developed a black carbon testing protocol that will allow woodstoves to be compared on a consistent and reliable basis as to their black carbons emissions, for possible use in eco-labelling by the Nordic Swan. This work then leveraged the first-ever domestic heating grant from UNEP/the Climate and Clean Air Coalition, to take this beta-testing global. The CCAC grant also includes elements focused on decreasing black carbon from existing stoves using "burn right" campaigns with consumers; policy support for interested governments; work with producers; and addressing the thorny problem of combined cooking and heating in developing countries. Work began in late fall 2015 and will continue through 2017.

ICCI also concluded its CCAC Open Burning project. Regional workshops took place in the Andes Feb. 12-13 in Lima, Peru; and in the Himalayas Feb. 20-21 (in conjunction with the CCAC Working Group meeting Feb. 24-26). A project website is located at: http://www.openburningcryosphere.org, and includes the maps created in 2014. Several new stakeholders were brought into open burning work for the first time, especially the Peruvian National Water authority ANA, which has responsibility for Peruvian glaciers, and the Bolivian Mountain Institute. Regional follow-up trips, including expert consultants took place in April (Himalayas) and May (Andes); ICCI was present in Kathmandu during the April 21 earthquake and the consultations broken off as a result; ICCI therefore returned to the region to complete follow-up in August. ICCI also held a briefing at FAO headquarters in Rome on the issue of open burning to engage its participation in the effort.

The networks created by these activities formed the basis of further discussions to determine the best candidates for the design of potential demonstration projects, engaging both national stakeholders and CCAC Partners in this work, occurring both virtually and through the expert missions to the two regions. Out of the initial wide net of 26 countries mapped in the 2014 phase of the project, ICCI proposed six catalyst projects and related policy work to the CCAC in November 2015. The project was approved in April 2016 and will continue through mid-2018, with CCAC-supported projects in Peru and India (Punjab), and co-financing sought for the designed projects in Bolivia, Ecuador, Nepal and Pakistan. The Open Burning Summary Report was released

at the FAO Rome seminar on September 26, and shared at a side event at COP-21 in Paris.

ICCI additionally maintained efforts to address open agricultural burning in Russia; and began expanding the project to Ukraine, including a grant from TMU to enable 2016 travel by farmers from the region to the U.S. to learn no-burn, "conservation agriculture" methods.

Antarctic and Arctic Climate Change:

Work continued in 2015 to bring climate concerns more directly into the Antarctic Treaty System, which in contrast to the Arctic Council has proven resistant to addressing climate issues outside the UNFCCC. ICCI participated in the May ATCM meetings in Bulgaria, and planted the idea of a joint Arctic Council-Antarctic Treaty Mechanism report on the global impacts of polar climate change for the globe. ICCI also joined the Arctic 21 coalition of NGOs working to bring climate concerns more deeply into the U.S. Arctic Council chairmanship, including the work of the Black Carbon and Methane Task Force.

Antarctica especially is today's elephant in the room on climate change, and along with the pending IPCC Special Report, such a "bi-polar" effort will be key in the coming five years to convince governments and the private sector that time is short; and the permanent consequences far too dire to allow these cryosphere dynamics to proceed any further.