News story: Surface water: The biggest flood risk of all

Introduction

I used to be a diplomat. I don't think I was a very good diplomat, because I kept telling people exactly what I thought. And I will do the same for you today. But one thing I did learn during my previous career was that if you want to understand any issue in foreign policy, you only need to know two things: history and the map. And I would suggest that the history, and the map, are equally good guides if you want to understand flooding – and in particular surface water flooding.

What surface water flooding is

I suspect that very few of you signed up to attend this conference on surface water management in order to find out what surface water flooding is. But I'm pretty sure that most the people outside this hall, the general public to whom this speech is also directed, won't. So for them, surface water flooding is what happens when there is too much rain for the drains and the streets fill with water.
This doesn't sound that threatening. Gene Kelly danced through a minor surface water flood in Singing In The Rain. Who doesn't love that?

Why it matters: surface water flooding is a real and growing threat

But the reality of surface water flooding is not nearly as cheerful as the movie. It is a real and growing threat – to life, to property, to the economy, to the country.

Surface water flooding is a risk because of its reach. Of all the flood risks to which our rainy island is subject – from coasts, rivers, groundwater, sewers and surface water – it is surface water flooding which threatens more people and properties than any other form of flood risk. Over 3 million properties in England are at risk of surface water flooding, even more than those at risk from rivers and the sea (2.7 million).
Surface water flooding is a risk because of its effect. It hits not just individual homes and businesses, but the whole infrastructure – road, rail, utilities etc – of a town or city, disrupting pretty much all aspects of modern life.

Surface water flooding is a risk because people don't know it is a risk. If you don't live near a river or the sea, it's not wholly unreasonable to think that you are not at risk of flooding. But reasonableness isn't the point. Leon Trotsky once said: "you may not be interested in war, but war is interested in you". Well, you may not be interested in surface water flooding, but it is interested in you. And people who don't know they are at risk are less well prepared to cope when the risk materialises.

Surface water flooding is a risk that tends to fall particularly on communities that can least afford it. Urban areas are more susceptible, because they have more concrete. Poor urban areas with high density housing are the most susceptible of all, because there are a lot of people and a lot of paved drives and parking spaces which don't absorb the rainwater, not big surburban lawns which do.

Surface water flooding is a risk which doesn't just affect our own country. The flash flood in Majorca last week, which tragically killed two British nationals, was a surface water event. The Dutch, who have been so successful in fighting sea flooding and are rightly regarded as world leaders in the field, are themselves struggling to manage a serious surface water risk building behind their mighty sea walls.

Most important of all, surface water flooding is a risk which is growing. An increasing population means more people are at risk. An increasingly urban population means more people are in cities, where the effects are starker. Development means more concrete, which means fewer places for rainwater to drain safely away. And the more frequent and intense rainfall which climate change is bringing will make flash flooding and overloading of the sewer network more likely and more frequent. That is why the government decided for the first time in 2016 to include surface water flooding on the national risk register.

Imagine this. It's another beautiful hot summer day in the South East. Gradually it turns humid, with thunderclouds building up over central London. Then the clouds burst with astonishing intensity. Within minutes water is overwhelming the drainage system. The underpasses start to fill up and the roads become impassable. The Tube stops running as parts of it flood. The city starts to grind to a halt. Then the power goes out. It's dark, and water starts coming into thousands of homes. It is inches not feet in most places. But in parts of the city it pours into basements, where it's several feet deep, and people start to drown.

This nightmare could happen. London is prone to high intensity thunderstorms and has an ageing Victorian sewer system. A smaller version did happen, in Hampstead in 1975 when in a localised thunderstorm it got more than three months of rain in three hours. Four of London's main-line railway stations were flooded and closed. Much of the Underground was brought to a standstill as tunnels were inundated and the electrics failed. 250 people were made homeless. One day, a much bigger rainfall event than that will happen somewhere in this country. We need to be ready.

The story so far: Pitt and after

The 2007 summer floods were a wake up call for all of us. They left 13 people dead, 44,600 homes flooded and £3bn damage. The rescue effort was the biggest in peacetime Britain. That event led to the 2008 Pitt Review, which concluded that much of the flooding had arisen not from rivers over-topping but from surface water pouring off the land.

The Pitt review led to the Flood and Water Management Act (2010), which

provided clarity on the roles and responsibilities of the Environment Agency, local authorities, water and sewerage companies and others who manage flood risks. It gave the EA responsibility for the strategic overview of flood and coastal erosion in England and powers to manage that risk, which we exercise with our direct responsibility for managing the risk of coastal and main river flooding. And it established Lead Local Flood Authorities (the unitary authority or county council), responsible for managing flood risk from surface water, groundwater, and ordinary watercourses in their areas.

The Environment Agency has made many changes in the light of the Pitt review:

We now give people better information so they can see whether they are at risk. In 2008, we produced the first map of areas at higher risk from surface water flooding. In 2013 we produced the Risk of Flooding from Surface Water maps. Check out whether your own house is at risk online.
We have improved how we forecast flooding. In 2009 the Environment Agency and Met Office jointly established the Flood Forecasting Centre. It provides a 24/7 flood forecasting service to the Environment Agency, the Government and the emergency responders.

We have completely overhauled how we warn and inform people of an imminent flood risk. Over 1.4 million people can now receive direct warnings from our flood warning service. We automatically register properties with landlines and mobile operators.

We've upgraded how we respond when flooding threatens, to deploy more people more quickly to more places to help. We've invested in new kit, including 40km of temporary flood barriers, 250 high volume pumps, and 4 incident response vehicles. We now have 6,500 staff trained to respond to incidents. And we regularly exercise with the military to ensure that we can call on their support when required.
And by the way, in responding to a flooding incident we don't distinguish between surface water flooding (the local authorities' responsibility) and river flooding (ours). To the public it is all water, and there is anyway often a mix of both kinds of flooding when it rains. So we will turn out to help local authorities with significant surface water flooding if they need us.

We are making record levels of investment in flood defence construction projects: £2.6 billion to better protect 300,000 homes by 2021.

We've changed how we deliver those flood defence projects. We now work in partnership with local authorities, businesses, the water companies, and local people to design and deliver the schemes that work for those local communities.

That includes schemes which reduce surface water flood risk. For example, the £14m Willerby and Derringham Flood Alleviation Scheme completed in 2016, led by East Riding of Yorkshire Council and Hull City Council. It better protects approximately 8,000 homes and 200 businesses from surface water flooding through a series of lagoons for rainwater storage. These lagoons resemble

flat pasture and for the majority of the time will remain dry, only to be filled during severe wet weather.

We've also taken up the Pitt Review recommendation that we improve the way we work with natural processes. Using nature to help manage flood risk, and adopting greener approaches to engineering, can help us to achieve better reduction of flood risk and create better habitats for wildlife and greater beauty for people.

The future: the challenges and how to meet them

So things are better than they were. But we cannot afford complacency. Because as all of us seek to improve our performance, the future challenges are growing. The challenge of climate change, which will bring more extreme rainfall. The challenge of development, which requires us to build more houses, all of which have potential to increase the risk of surface water flooding. The challenge of constructing modern infrastructure which does not increase the risk of surface water flooding and is more resilient to it when it happens.
How do we meet those challenges? By pressing all the buttons that are available to us, and by doing it together.

Pressing all the buttons means several things:

It means improving how we manage surface water now. Defra's Surface Water Management Action Plan (published in July 2018) seeks to strengthen the current arrangements by improving our collective understanding of the risks and helping those responsible to manage them effectively. It promotes better partnership working across all the flood risk management authorities, better risk assessments, better data sharing, and better guidance. We in the Environment Agency will help take this forward by leading work to produce a national picture of skills and capability in our risk management authorities, by giving guidance on asset registers, and by putting in place mechanisms to allow better sharing of data and communication of forecasts.

It means thinking about how we should manage surface water flood risk in future. Michael Gove recently commissioned a review of the Multi Agency Flood Plans produced by the Local Resilience Forums. Major General Tim Cross led that review and reported this summer. He underlined the need for the Environment Agency, the local authorities and the emergency responders to work even more closely together in the Local Resilience Forums to plan for and respond to surface water flooding and other local flood events. We in the EA agree with that, and will redouble our efforts over the coming months.

It means improving our forecasting, so that communities get more accurate and earlier warning when flooding threatens. Our flood forecasting is now much better than it was even a few years ago. We can usually predict coastal flooding like an East Coast storm surge 2-5 days before it arrives; and river flooding 12-48 hours before. But surface water flooding is the hardest of all to predict, and at present is sometimes just not possible at all. We can predict that there will be thunderstorms in a particular area. But precisely where the rain will fall, the duration and the effect on the ground often

can’t be predicted until it’s happened. Getting better at this is a huge technical challenge. But we are working with our partners to make progress. It means designing resilience into our towns and cities. Part of this is about Sustainable Drainage Systems, which can make communities more resilient to surface water flooding and deliver a host of other benefits – public spaces with more green and blue; more beautiful surroundings in which people can live, work and play; enhanced habitat for wildlife, greater biodiversity, improved water quality, and so on. The EA is working with developers, local authorities and the water companies to support the integration of SUDs into as many locations as possible, and I have seen some great examples.

One of my favourites is Slough Salthill Park SUDS, a project which the EA supported with the local school, the local authority and Thames Water. Together we turned part of an inner city school’s playing field into a sustainable drainage lake, filled with plants and animals. It was a win for everyone. It reduced flood risk to Slough. It helped Thames Water: like other water companies, they don’t want any more water than necessary going into the main drains, because that risks flooding and/or sewage contamination. Most of all, it gave those schoolchildren a first hand and now permanent experience of nature.

But designing in resilience is about a lot more than SUDs. It means starting far upstream in the planning process so that new developments are themselves laid out in ways which reduce surface water and other risks. Milton Keynes is a good example – a city that was planned to be decentralised, without high concentrations of concrete in one centre with the attendant risks, with green and blue spaces designed in where they already existed and new ones created where not. All over the country now we are working with developers and local authorities to seek to emulate that.

It means innovation and new technology. Engineers, inventors, housebuilders, the construction companies, those who design utilities and all the other things which contribute to or can suffer from surface water flooding, all have a part to play.

It means recognising that some of the causes of surface water flooding are neither urban nor to do with concrete. The wrong kind of farming in the wrong place can cause significant surface water flooding. Example: Maize. There has been a dramatic increase in maize production over the last few years, primarily to feed Anaerobic Digestion plants. The problem with maize is that it’s harvested in late autumn, when the ground is wet. This, combined with the use of heavy harvesting machinery, tends to compact the soil. And compacted soil can’t absorb rainwater, which causes surface water runoff, which in turn can cause local flooding and pollute watercourses.

It means mitigating climate change. There is a direct connection between chaos on the streets of Birmingham or Newcastle, both of which have been affected by major surface water flooding events in recent years, and man-made climate change. This is not a speech about climate change. (That was last month, if you are interested). But the more we can stop the activities that cause climate change, the easier we will make it to tackle the greater flood risk it will otherwise generate.

Finally, there is one more button we need to press if we are to tackle the surface water flooding issue: public awareness. If people know they are at risk they are more likely to do something about it, whether that means ensuring they put in property level protection in their own house, or encouraging their local council to ensure that the risks are mitigated. So just talking about surface water flooding, letting people know it exists and has consequences, as we are doing today, is an important part of the mitigation.

Conclusion

A wise environmentalist once said to me: “The thing about water is that it gets everywhere“. This is a simple but profound truth. Water does get everywhere, and when it gets where it’s going there are always consequences, good or bad.

So if there is somewhere you don’t want water to be, like people’s houses or the local supermarket, a community centre, a power station, a railway line, an underpass or a road, you’d better make sure that you have the right measures to stop it going where it wants to go.

Today’s event, and the debate I’m sure it will launch, is an important step in thinking through together how we can ensure water only goes where we want it. I wish you all well in your deliberations. Because this really, really matters.

Speech: Calling on the Syrian Authorities to Engage with the UN and the Broader Political Process

Thank you very much Mr President. Thank you Special Envoy for your briefing and for all the work that you and your teams do on the ground. I learn with personal regret of your intention to move on, much as I understand the reasons, and I’ll come back to that if I may. But I think this Council and all the United Nations owe you a tremendous debt because you have stuck with one of the most difficult portfolios that I think any representative of the Secretary-General can have in any conflict, and you’ve done it for four long years, so we thank you very much for that. And as I say, I’ll come back to that later.

The war itself of course has gone on even longer than your tenure. I think you’re the third Special Envoy of the Secretary-General and the war has gone on for seven very long, very gruesome, very awful years for the Syrian people.

And I'll start with Idlib. Idlib is a terribly important moment because three million civilians remain at risk there and we salute the work that the Turkish government have done, working with the Russians, to get the current situation in Idlib under control. And if I can quote the Emergency Relief Coordinator; we hope that it is a reprieve and not a stay of execution. But I think everyone on the Council remains fearful that the delivery agreement won't hold. So I think my first point is that this Council should do everything it can to support you and support Turkey in having that Idlib agreement be preserved.

Secondly, as the French ambassador said, the humanitarian situation still remains very difficult and very challenging. There has been progress in certain areas but it is not the case that aid is going to all the people who truly are in need. And so we also call upon everyone and the Council to redouble efforts to support OCHA, the ICRC and others in getting aid through. And we call on the Russian and Syrian governments to ensure that the aid gets delivered on the basis of impartiality and need.

As you said Special Envoy, Idlib does represent not only the potential salvation of three million civilians, but also a window of opportunity on the peace process, and my American and French colleagues set out very clearly how that might be taken forward. And I just want to add the United Kingdom's voice to what they said. You have described, Special Envoy, exactly how the Constitutional Committee should be constituted, how it might work, what sorts of things it could look at. Now under 2254, this was supposed to have all been set up within six months. And frankly, I think on our side, it beggars belief that the Syrian government cannot work with what you have set out. And I agree with the American representative that the fact that the Syrian government cannot work with the Constitutional Committee as you have set out calls into question either Russian good faith in brokering that deal at Sochi in the first place or it shows that the Russian government does not have power and influence in Syria. And I think both of those two things are quite dangerous for the potential of the Syrian political process and I think we should spend some time thinking through the consequences of there being no progress at all on the Constitutional Committee. And even at this stage, we would appeal to the Syrian authorities to make every conceivable effort to work with the UN to bring the Constitutional committee into being on the lines you have set out to set out. We completely agree with you and the Secretary-General; the UN cannot be involved in this charade. This Constitutional Committee must be a genuinely credible and representative process.

As the French ambassador said, it isn't the only part of the political process. It isn't a threat to Syria's sovereignty or her territorial integrity or her unity to work with the United Nations on a broader political process. All the experience of this Council, over very many decades, but in recent times from the Balkans to Africa to the Middle East, shows that when you have conflict as divisive and as awful and as damaging as the Syrian conflict has been for the last seven years, you need to have a representative political process if you want a country to be stable, if you want it to be coherent and above all, if you wish to reintegrate back into the

international community. And I assume that the Syrian people really want those things.

So we take the opportunity today to call on the Syrian authorities to put aside self-interest and to engage with the United Nations and the broader political process. We call on them to ensure sustained humanitarian access as I said earlier, but we also call on them to put an end to policies and practices that create obstacles for displaced people and refugees returning home and rebuilding their lives. And we call on them to start progress towards creating a safe and neutral environment in which all of Syria's communities, regardless of religion or ethnicity, can thrive and be fairly represented.

Moving on to your visit to Damascus, I hope that you go with the Council's full support in delivering the Secretary-General's clear and direct message to the Syrian authorities.

We thank you for the offer to come back to the Council and to brief us further, and I think as others have said, it's of such vital importance that we seize this opportunity. You'll always be welcome in the Council any time, but I hope you will err on the side of keeping the Council updated as to how your talks are going.

You mentioned the Brussels Conference. I want to be very clear again: the sort of reintegration of Syria into the international community, the coherence and stability that need to flow from a genuinely representative political process, will need reconstruction money and it will need reconstruction money from the West. This is also a lesson of all conflicts that we have been dealing with collectively over the last few decades. And I take this opportunity to reiterate, as I am sure the Brussels event will do so, we will not provide reconstruction assistance for Syria absent a credible political process leading to a settlement that is genuinely in the interests of all of Syria's communities. To do otherwise would be to see the awful seven years that have bedeviled Syria be repeated time and again until we are all locked in the most vicious of spirals. Syria needs to overcome the factors that led in the first place seven years ago to the conflict that we are now all struggling with and that cannot be done by ignoring help from the United Nations. It cannot be down by turning your back on the international community. And I hope that the Syrian representative will be able to transmit these messages to his authorities in advance of your visit to Damascus.

I'll save a fuller tribute to your work, Special Envoy for when we get your final thoughts and advice on what follows in the future after November. I welcome the fact that you have said you will be honest and direct and clear. We look forward to that. We hope you will give us unvarnished advice on what to do next. We hope that the outcome of that will be a way that the United Nations can assist the people of Syria in coming to a political settlement, but we must also contemplate other scenarios unless we see movement from the Syrian authorities. It is a defining moment. I hope the Council will be able to support you to the full. I look forward to hearing your future account, but I do just want to close by expressing our deepest thanks on behalf of all the British government for everything you have done to work for the United

Nations on this most difficult of dossiers. Thank you.

Speech: Preventing Conflict over Natural Resources

Thank you very much Mr President and like other colleagues, thank you for bringing this subject back to the Security Council's attention. I think we've heard a lot of common themes today. While natural resources often bring great benefits to a country, they can also contribute to the outbreak of conflict and feed the conflict cycle. We have already heard from other speakers that at least 40 per cent of all intrastate conflicts in the last 60 years have had a link to natural resources according to the United Nations.

Natural assets that ought to drive domestic economic growth all too often can be subverted and diverted. In Iraq, we've seen how Da'esh used oil resources to fund their campaign of terror. In Libya, competition for control of oil resources remains one of the key drivers of conflict. The trade in diamonds has driven conflicts in countries such as Angola, DRC, Liberia and Sierra Leone. I was very interested in what our colleague from Cote d'Ivoire said about the total cost of this being something like $50 billion per year – exceeding aid budgets – and that's a very telling figure.

Conversely, resolving disputes over control of natural resources can be a central pillar of peace processes. For example, oil was a crucial element of the peace agreement between Sudan and South Sudan.

Beyond oil and diamonds, conflict over land and water resources is a growing risk. Population growth and climate change – and thank you again to the Swedes for their excellent Presidency debate on this – climate change threatens to increase competition for natural resources, and hence, the risk of conflict.

SDG 12 calls for responsible consumption and production and this is integral to reducing the risk of conflict and achieving a sustainable peace. National responses have unfortunately proven insufficient to tackling such complex challenges. We believe that a multilateral approach is critical, needs to be based on international cooperation and respect for the rules based international system including the relevant parts of international law.

Mr President, a number of speakers mentioned sanction regimes. These can provide a useful tool for tackling the role of natural resources in perpetrating conflict. The Council has imposed sanctions on the trade in diamonds in Angola, DRC and Sierra Leone, and timber, for example, in Liberia. Calibrated sanctions on trading charcoal in Somalia, oil from Libya and DPRK and the absolute prohibition of the oil trade with ISIS have all helped curtail the ability of spoilers to destabilise already fragile

situations. But the success of these sanctions regimes and hence our ability to mitigate or prevent conflict relies on implementation by all Council members but also all UN member states.

In UN peace operations, our responses should be tailored to the context. We need to pay attention to the underlying causes of conflict including, where relevant, to support countries to overcome issues pertaining to the nexus between natural resources and conflict.

That said Mr President, I just wanted to respond briefly to what the Russian Representative said; not all interventions Mr President, are driven by negative motivations. It is important that the Council and countries are ready to address crimes against humanity. It is important that they are ready to address grave human rights abuses and important that we are ready to address the imminence of overwhelming humanitarian catastrophes. So I just want to place on record that we reject his descriptions of why Western interventions have been made over the past years.

Mr President, a number of speakers also mentioned the Council's recent visit to the DRC. We heard how the illegal exploitation of mineral resources by armed militia in Eastern DRC is fuelling conflict and imposing suffering on the civilian population. The value of goods smuggled across the Eastern DRC border exceeds that of formal trade, with gold the most valuable component. So I was very interested in the ideas the French Representative put forward about including gold in an enhanced regime. If we are to end the conflict in DRC, we need to see an end to the smuggling of the mineral resources, and we support MONUSCO's role in helping the government address this.

We believe we can also do more to identify and address risks related to natural resources and conflict through early warning systems and efforts to support countries to alleviate potential triggers. We very much appreciate the work of UNCTAD in this respect. I share the French approbation of EITI. There are also some other ideas that we believe are very much worth exploring. Sweden had ideas around tax and audit and tackling organised crime, and China had an interesting idea around using the PBC. We would be very willing to work with colleagues on the Council to try and advance these instruments.

The Kimberley Process has also been raised. The UK is proud to be a founding member of the Kimberley Process and we are encouraging the current reform process designed to make the framework even more effective. And in addition to Kimberley, the United Kingdom is committed to strengthening the international framework for regulation of trade in minerals linked to conflict.

And I'd like to highlight the mining and trading of tin, tantalum, tungsten and I've already mentioned gold. These minerals are key components from modern technology under the right conditions, the mining of these minerals can build both prosperity and security for local communities. But otherwise we end up with deplorable practices from human rights abuses to illicit financing of conflict.

We want to help address these issues, Mr President. We believe that we should be encouraging compliance with the OECD due diligence guidance for responsible mineral supply chains from conflict affected and high risk areas. Implementation of this guidance becomes mandatory for the biggest importers in the European Union in January 2021 and I can assure the Council that even after Brexit, the United Kingdom will remain committed to this regulation. We also support the European partnership for responsible minerals which is a multi-stakeholder initiative consisting of governments, civil society and the private sector, recognised by the European Union as an official accompanying measure to the EU regulation.

In conclusion Mr President, the role of the Council in tackling the problem of natural resources as a cause of conflict continues to be a very important instrument that we should ensure we use to the full.

News story: Automated design for a more efficient railway: apply for funding

Figures show that around 1.7 billion passengers use the UK's railways every year. This number has more than doubled in the last 20 years – requiring innovative ways to design railway infrastructure that will support growth in future capacity.

Working with Network Rail, Innovate UK has up to £300,000 for businesses with projects to fast-track automated design. The aim is to build safer and higher-capacity railway infrastructure, save money and improve services.

Long-term planning and capacity

Planning for the long-term future of the UK's railways involves navigating a complex range of systems.

As well as crossing many different types of terrain and land uses, there are underlying considerations such as stock and track maintenance, bridges and tunnels. Importantly, planning must reflect passenger need.

This competition is looking for ways to make automated design more efficient, allowing Network Rail to accelerate new designs, explore long-term performance and assess demand.

Building on existing technology

The competition is open to industrial research projects as well as

experimental development projects that are closer to market.

Projects should automate the design of at least one of the following:

- track layout
- overhead line electrification
- traction power supply system
- signalling systems
- other railway infrastructure not mentioned here

All projects must show how they build on existing automated design technology and work in a simulated rail infrastructure design environment.

Competition information

- the competition opens on 22 October 2018 and the deadline for applications is at midday on 19 December 2018
- a briefing event will be held on 1 November 2018 in London, where you can find out more about the competition and how to make a quality application
- total project costs must be between £50,000 and £200,000
- projects can last between 6 months and one year
- businesses could get up to 70% of their costs

Find out more about this competition and apply.

Press release: UK-France space agreement delivers device to ocean satellite

A device built in the UK by Honeywell, which will form a vital part of the mission to make the first global survey of the world's surface waters and oceans, has been delivered to Thales Alenia Space in France.

The Surface Water and Ocean Topography, or SWOT, mission is led by CNES (the French Space Agency) and NASA with support from the UK Space Agency and the Canadian Space Agency. The UK Space Agency and CNES signed a joint statement in January 2018 during the UK-France Summit in Sandhurst to step up co-operation in space, building on 2014's Brize-Norton framework arrangement.

The warming of Earth's climate may profoundly alter the movement of freshwater resources from lakes to rivers to reservoirs, resulting in significant societal impact. The SWOT satellite will use radar technology to measure the features of oceans, coastlines, rivers and lakes across the globe

to improve understanding of changes over time and their impact on farming, industry and human populations.

The UK-built device, known as a duplexer, is a vital component that routes radar signals around the satellite and can transmit at a power of 1,500W – a level never before seen in this kind of device.

Speaking in Brussels at the Committee on Earth Observation Satellites Plenary, UK Space Agency Director of Growth Catherine Mealing-Jones said:

> Satellites play a major role in understanding our home – planet Earth. Using great British technology, the SWOT mission is a great example of how satellites can take measurements of our environment from the unique vantage point of space, in this case, giving us the first global survey of one of our most precious resources – water. The UK and France are leading space powers in Europe and the delivery of the duplexer for the SWOT mission is a significant milestone in our partnership, which continues to go from strength to strength.

It will now be integrated into a Radio-Frequency Unit by Thales Alenia Space before NASA engineers add it to their KaRin instrument developed at the Jet Propulsion Laboratory (JPL) in California. The satellite is due to launch 2021.

CNES is supplying the RFU (Radio-Frequency Unit), which is co-funded with the UK Space Agency UKSA. As well as the duplexer, Thales Alenia Space is developing the 'hyperbox' in Toulouse which will create the radar pulse and receive radar echoes.

Hailing this new milestone, CNES President Jean-Yves Le Gall said:

> This new step forward for the SWOT mission is a product of the close relationship between our space agencies and industries. The joint statement signed by CNES and UKSA in 2018 during the UK-France Summit in Sandhurst is being effectively applied and France and the United Kingdom are pursuing their successful space cooperation.

The UK and France are also teaming up on the MicroCarb programme to monitor and map sources and sinks of carbon gases, as well as supporting the implementation of a Space Climate Observatory, which was set out in the Paris Declaration on Climate Change.

This week is Green Great Britain Week, which is showcasing the leading role of the UK's academic and business communities in tackling climate change while generating economic growth.

Green GB Week celebrates the tenth anniversary of the UK's ground-breaking

Climate Change Act. The UK has played a leading role in delivering clean growth – growing the economy by more than two thirds while reducing emissions by over 40% since 1990.

Clean growth is central to the Government's modern Industrial Strategy, and Green GB Week includes 100 events across the country promoting the opportunities from clean growth and raising awareness of how businesses and the public can contribute to tackling climate change.

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