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## Climate Change and the Syrian Civil War Revisited: A Rejoinder

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We are grateful to Peter Gleick, Cullen Hendrix, and Colin Kelley and colleagues for taking the time to comment on our work. Here we respond on five issues.

### ‘Nothing refutes this’

In our article (Selby et al, 2017), we do not contest the idea that anthropogenic climate change may have been a contributory factor in civil war onset in Syria. This is for two reasons. For one, given that everything in today’s world is at least indirectly connected – through no more than ‘six degrees of separation’, according to popular lore – it would be absurd to insist that there are absolutely no causal links between greenhouse gas forcing and the Syrian uprising. And second, even if there were no causal links between the two, this would be impossible to demonstrate, since, as we point out in our article, claims of the ‘contributory factor of *unknown or unspecified significance*’ variety are essentially unfalsifiable.

Gleick (2017) and Kelley et al’s (2017) continued insistence, in their commentaries, that climate change was ‘one of many contributing factors to the unrest’ in Syria, that ‘nothing’ in our article ‘refutes this’, and that our article ‘fails to debunk earlier studies that identify ... such links’ should be read in this light. For, given the unfalsifiability of contributory factor-type claims, it is difficult to imagine what new evidence or arguments could refute – or what Gleick or Kelley et al would consider as refuting – the Syria-climate conflict thesis. More than this, it is worth reflecting on what Gleick and Kelley et al mean when they insist that climate change was a contributory factor to the uprising. Does this mean that climate change-related drought was one of a small handful of factors behind Syria’s descent into civil war; or that it was one amongst a thousand, or even a million, others? Is their claim that climate change was a significant factor behind the uprising; or that it was a frankly trivial one? We do not know. Gleick (2017) implies that his position is merely that ‘there was some non-zero’ link between climate change and the unrest – which, if this is indeed his view, would place climate change alongside an infinite number of other influences on civil war onset. By contrast, Kelley et al (2015: 3242) seem to lean towards the view that climate was either a ‘primary or substantial factor’. In short, the thesis that climate change was a contributory factor in Syria’s unrest is, by itself, without clear meaning, impossible to falsify, and hence *close to meaningless*.

### ‘Straw men’

Gleick (2017) claims that our article misrepresents the existing literature as claiming that climate change was the only, or a major, cause of unrest in Syria, and that our analysis is therefore founded on ‘straw men’. We reject this. The second section of our article explicitly recognises that ‘no one seriously believes that climate change and drought were the sole causes of Syria’s civil war’. Neither our framing questions as set out in this section, nor our conclusions to the article, depict the literature as making mono-causal arguments. And in between we repeatedly note that this literature does discuss contextual factors: we note, for instance, that no one thinks that pre-civil war migration from northeast Syria was ‘caused by poor rains alone’. It is Gleick, we believe, who offers straw man arguments here.

### **‘No validity scientifically’**

Our actual analytical strategy is neither to ask whether climate change was a contributory factor behind the Syrian uprising, nor to ask whether it was the sole or primary cause, but to examine whether the *evidence* on these links is *clear and reliable*, and whether, on the balance of available evidence, the causal links between climate and revolt are *as significant* as claimed. Our method, in short, centres on evaluating the robustness – the clarity and reliability – of existing *evidence*, by interrogating its logical coherence, its unspoken assumptions, its substantive oversights, the quality of sources, and the circuitous routes through which ‘truths’ are established and reproduced. Unfortunately, Gleick and Kelley et al’s approach to evidence – at least on the question of drought-conflict linkages: we return to anthropogenic climate change below – is rather different.

Consider the question of migrant numbers. We point out in our article that the claim, made by Gleick (2014: 334) and Kelley et al (2015: 3241-2), that around 1.5 million people were displaced by the drought is without foundation – having been drawn from just one short news bulletin, and being completely out of line with all other known estimates. Yet Kelley et al (2017) resist this conclusion. Their counter-evidence? One UN report (UN-OCHA, 2010), which, according to Kelley et al, found that 300,000 families were displaced by the drought – but which actually contains no such finding. Two figures for abandoned villages, both derived from unattributed conversations (Ababsa 2015: 199), which in any case do not corroborate the 1.5 million figure. An unsubstantiated assertion about drought-related displacement just prior to the uprising. A claim about the number *affected* by the drought, which tells us nothing about the number who *migrated*. And a claim that two to three million were pushed into ‘extreme poverty’ by the drought, which is even worse – since, as we point out in our article, this claim is derived from studies of *pre-drought* poverty levels. We do not know how many people migrated from northeast Syria during, or in response to, the 2006/07-2008/09 drought. We would not treat as gospel the UN and Syrian government estimate of 40-60,000 families. But Kelley et al’s (2017) counter-evidence on this issue is exceedingly weak, and does nothing to make us doubt our assessment that this migration was not on the scale claimed.

Much the same applies on the claimed links between drought-related migration and civil war onset. In our article we point out, inter alia, that the existing evidence on these links is exceptionally thin; that Kelley et al (2015) significantly overstate the contribution of drought-related migration to Syria’s pre-civil war urban growth; that the geography of the uprising does not necessarily support the climate-conflict thesis; that, to the best of our knowledge, there is no evidence of the extensive involvement of migrants from the northeast in the early 2011 protests; and that none of the political demands made during these protests related directly to drought or migration. Gleick (2017) and Kelley et al (2017) ignore most of these arguments. And what counter-arguments do they offer? That the 32 extended qualitative interviews with Syrian refugees used in our article, which were conducted by Fröhlich over a period of five months with a total duration of more than 25 hours, are of ‘no validity scientifically’ – a contemptuous dismissal from Gleick (2017) not only of this research, but of vast swathes of social scientific enquiry. And, from Kelley et al (2017), a report from *Scientific American* entitled ‘Syria’s climate refugees’ (Wendle, 2015), which – as part of an unreflectively drought-centric narrative of the Syrian crisis – includes

various generic statements by Syrian refugees about the impacts of water shortage and drought, none of which contradict our arguments summarised above.

Unfortunately, much of what has been written about climate change and the Syrian civil war is underpinned by a questionable approach towards evidence. Nothing in Gleick or Kelley et al's counter-arguments on the links between drought, migration and civil war suggests otherwise.

### **A human-induced drought?**

On the question of whether anthropogenic climate change is implicated in Syria's 2006/07-2008/09 drought Kelley and colleagues are on a firmer footing, but here too we question the robustness of their position. First, while we agree on the severity of this drought, and that there was anomalously low rainfall from 1999/00-2008/09 in the Fertile Crescent and in northeast Syria specifically, we do not accept that this decade-long anomaly amounts to evidence of a multi-decadal long-term drying trend. Kelley et al (2015: 3244) depict this trend as stretching back to the 1930s; yet, as we note in our article, for the majority of the twentieth century this trend is weak to non-existent, to the extent that it is essentially an artefact of the anomalously low rainfall during 1999/00-2008/09. Kelley et al (2017) marshal further evidence of this severe rainfall anomaly, but even the key study which they cite (Cook et al, 2016) does not formally diagnose a multi-decadal drying *trend* in the Levant.

Second, we do not accept that the three-year drought or the decade-long anomaly definitely betray human influence. The model simulations deployed to make this case involve significant uncertainties, and involve comparison with a multi-decadal trend which, as argued above, is a statistical artefact. Experience from elsewhere, especially the Sahel, suggests that extreme decade-long rainfall anomalies are not necessarily evidence of human influence (Schewe and Levermann, 2017). Moreover, the study by Cook et al does not 'strongly implicate' anthropogenic influences on the Fertile Crescent's climate, as Kelley et al (2017) maintain – since Cook et al do not even undertake an attribution analysis; they concede that 'natural climate variability in the [Levant] region is still poorly understood'; and the most they therefore provide is 'some support' for human attribution (2016: 2060, 2071).

We also wish to reiterate, thirdly, that even if our arguments above are misplaced, this would not justify Kelley et al's (2015) finding that anthropogenic forcing is 'implicated in' Syria's 2006/07-2008/09 drought, since the most that their study demonstrates is that human influences increased the drought's *likelihood*. And as we note in our paper, this is not the same as saying that *this* specific drought in *this* specific place was caused by greenhouse gas emissions. Or stated differently, Kelley et al's probabilistic findings logically imply that this particular drought could have occurred for natural reasons alone.

### **Implications**

What, finally, of the implications of our analysis? Hendrix (2017) reflects sensitively on these, observing that he 'can practically hear the anti-science machine revving its engine in anticipation of these findings'. Quite so. But what do we, as authors, think the implications should be?

We wish to make three points here. Firstly, we wish to emphasise that nothing in our analysis or our other writings questions the fact of anthropogenic climate change (though this really should go without saying). Second, we wish to note that, though some may read our article as evidence that ‘all this talk of climate change and conflict is wrong’, as Hendrix fears, this is not our view. Most academic studies of climate-conflict linkages are much more careful in their use of evidence, and on issues of causation, than the studies interrogated here. Moreover, though there is room for debate on *where*, *when* and *how* climate change will affect conflict, we do not doubt that it will do so. Given the scale and the range of challenges posed by global climate change, it would frankly be incredible if it did not have some significant conflict implications.

And yet there is a long, sad history of people making overblown claims about climate change and conflict, the Syria example – and Al Gore’s recent extension of it to explain the UK’s vote to exit the European Union (Johnston, 2017) – being clear cases in point. Climate conflict discourse has historically been much more policy- and media- than research-led, and indeed policymakers and journalists often show scant regard for academic nuance on these issues (see e.g. Selby and Hoffmann, 2014). In the Syria case, this problem has been accentuated by the readiness of certain natural scientists, most prominently the authors of Kelley et al (2015), to feed this un-nuanced policy and public discourse while using evidence casually and failing to engage with relevant social scientific research. To this extent the main implication of our analysis is simple: that far greater care is required, since without such care there really is a risk of climate conflict talk fuelling climate scepticism.

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