Sea-level rise may displace 13 million people in the US by 2100

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Mathew Hauer, a demographer at the University of Georgia in Athens, says that until recently most studies that predicted the risks associated with sea-level rise used current population numbers combined with projections of future sea levels.

The problem with that, he says, is that the predictions have become “outdated almost immediately”.

“Coastal communities are some of the most rapidly growing communities in the world, so you have to account for the fact that these areas are growing,” says Hauer. “Using current data, we’re underestimating what the future growth in coastal communities is likely to do in terms of placing people at risk of sea-level rise.”

Hauer and his colleagues therefore combined projected population growth with the scenarios of the US National Oceanic and Atmospheric Administration (NOAA) on predicted sea-level rise.

They found that a 1.8-metre rise by 2100, near the top end of NOAA’s predictions, could lead to 13.1 million people being displaced – more than three times as many as indicated by current populations. A more modest 0.9-metre rise would still displace 4.3 million, also a three-fold increase on previous estimates.

Varied impacts

The effects will vary for different parts of the country’s coast, with 70 per cent of those likely to be displaced living in the south-eastern states – which include North Carolina, where it is illegal for policymakers to base measures for coastal management on predictions of accelerated sea-level rise.

Florida alone is forecast to account for half the total. Communities in South Carolina, Virginia and New Jersey are also at risk of large population displacements.

Athanasios Vafeidis, who studies the risks from sea-level rise at the University of Kiel in Germany, says it is important to look at socio-economic changes that can affect the impact of sea-level rise.

But he doesn't think the number of people displaced will be quite as high as predicted, because people will adapt to the changing shoreline.

"It's very important to show what is potentially at stake to communicate the costs of inaction," says Vafeidis. "But we also need to communicate the benefits of adaptation. How well we adapt will be the main determinant of future impacts."

Hauer hopes that his predictions will help politicians and planners to make smart decisions about where to invest in those adaptations to deal with rising seas.

"If you deploy infrastructure in areas that are growing, you might be protecting more people in the future than you're currently protecting, making it a better investment," he says.