Sea Level Rise

The Intergovernmental Panel on Climate Change 5th Assessment Report concluded :

"Since the early 1970's, glacier mass loss and ocean thermal expansion from warming together explain about 75% of the observed global sea level rise"

I really don't understand how they can make this statement with high confidence. Global sea level has been rising for thousands of years, since the last ice age, which is shown in the diagram in the upper right corner. The key question is whether human caused warming is accelerating the sea level rise, beyond the natural rate. This figure from the IPCC 5th Assessment Report shows the time series of 18 year average sea level trends. If you look back to the 1930's and 1940's, the rate of sea level rise was at least as large as the recent values when there was little contribution from human caused warming.

The impacts of sea level rise are local, and you need to put the sea level rise from warming in context with other factors, such as geological sinking or rising, ground water withdrawal and river engineering. The arrows on this diagram relate to the magnitude of observed sea level rise over the past 50 years or so. The green arrows are 0-3 mm/yr, which encompasses the recent global averages. You can see that in many of the most vulnerable locations, especially New Orleans, the observed rate of sea level rise is substantially greater than anything that can be explained by warming. Even if you assume the climate models are correct, attempting to slow sea level rise by reducing greenhouse gas emissions will at best address only a fraction of the problem in the most vulnerable locations.