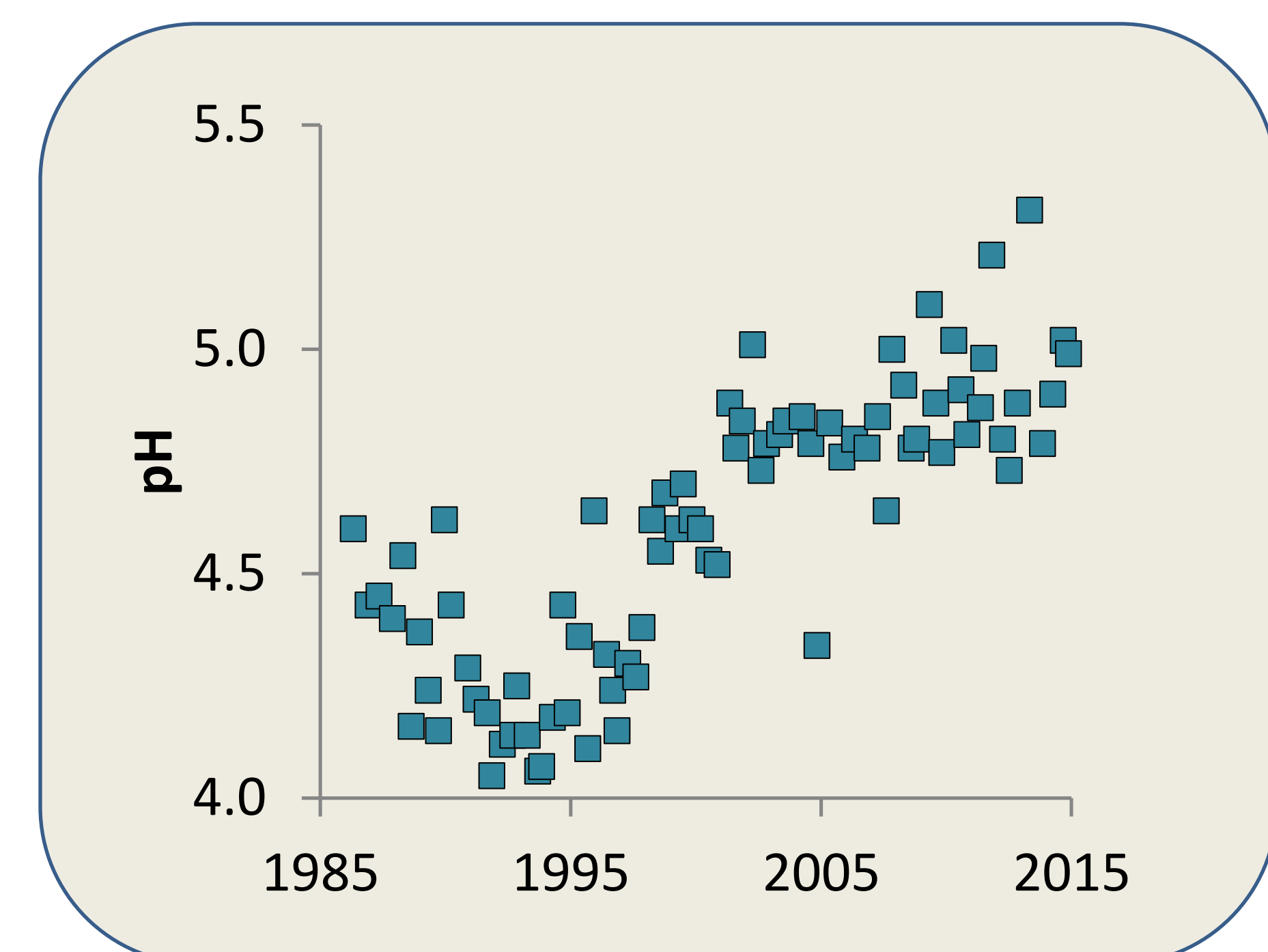
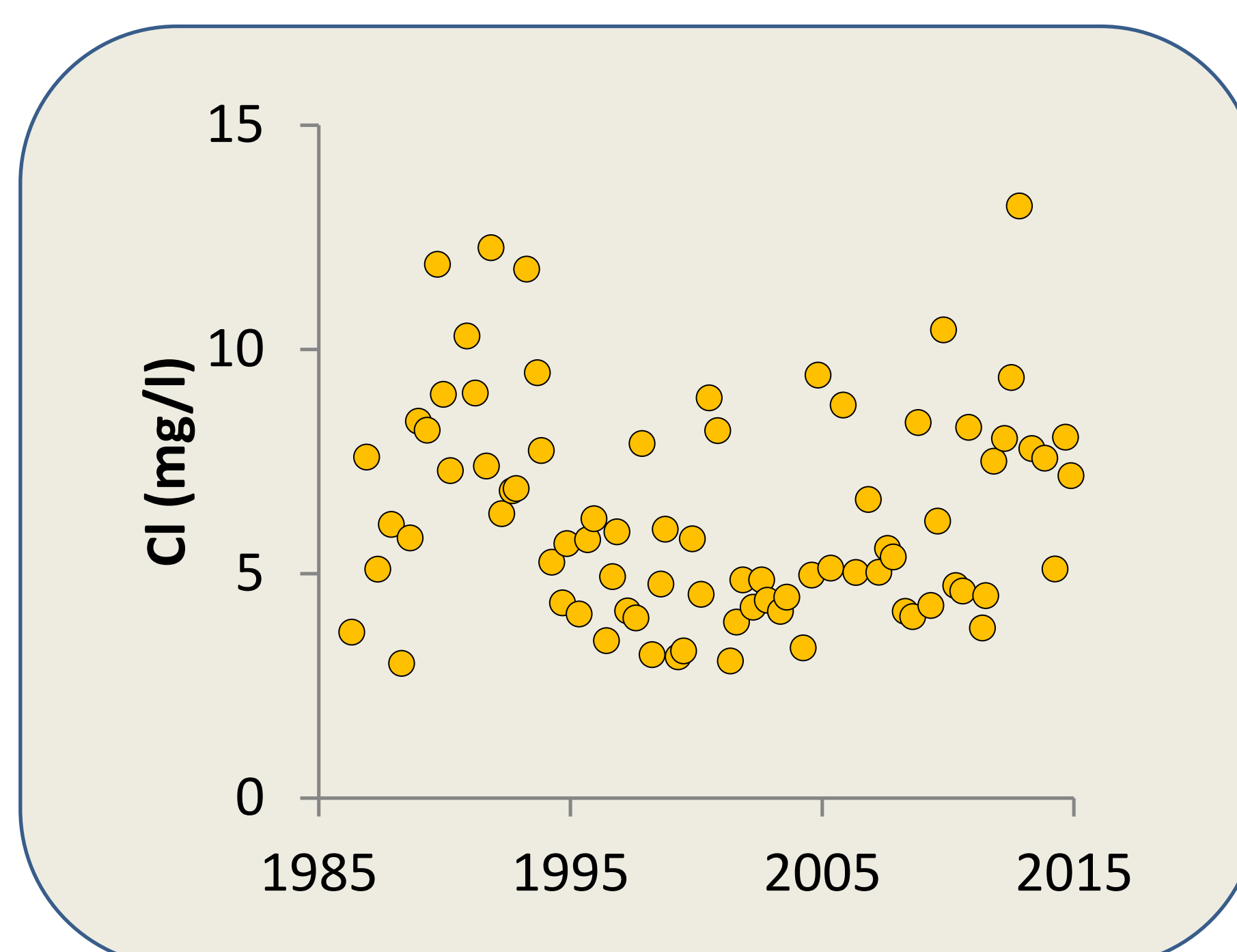


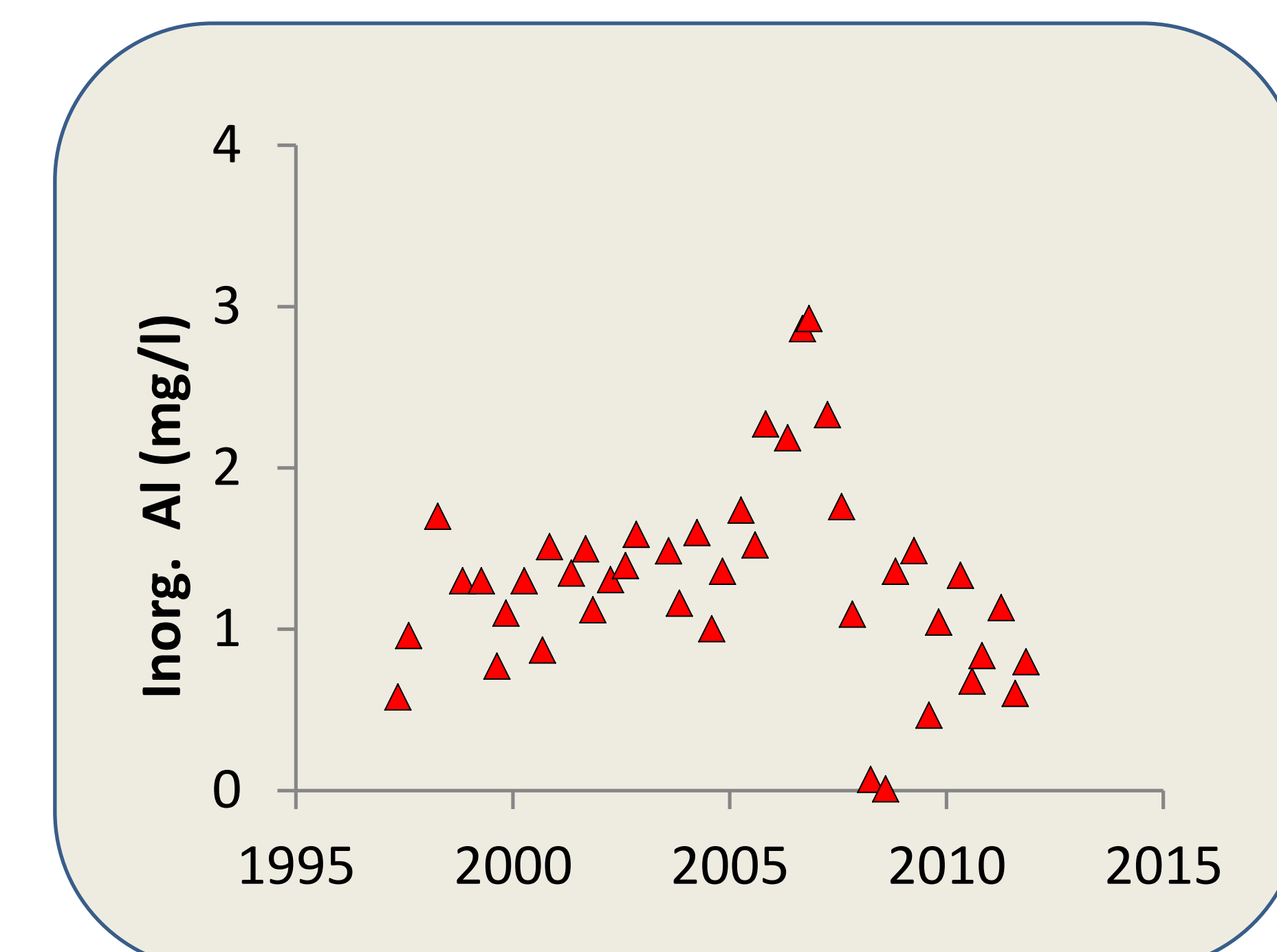
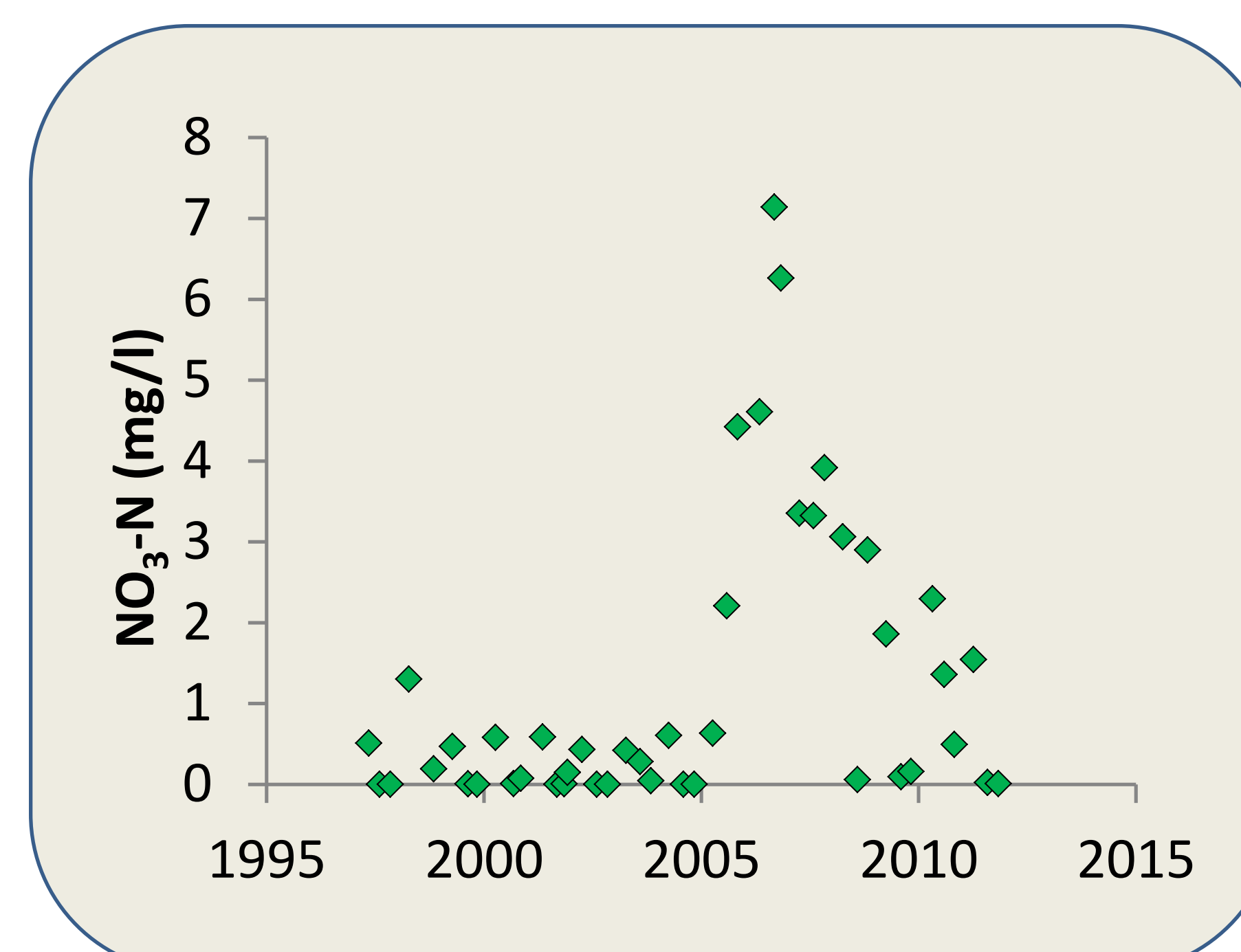
Cecilia Akselsson, Sofie Hellsten, Per Erik Karlsson, Gunilla Pihl Karlsson

Events of high sea salt deposition and drastic changes in forest stands after disturbances can give very fast and adverse effects in soil water chemistry. The effects are generally greater in acidified and nitrogen rich soils. Within the SWETHRO monitoring network in Sweden, there are examples of acidification events after sea salt episodes as well as highly elevated nitrogen concentrations and acidification episodes after storm fellings and bark beetle attacks. Storm damage and bark beetle attacks are predicted to become more common in the future, and may thus have a higher impact on nitrogen leaching and acidification episodes than before.

In the early 1990:ies there were several occasions with high inputs of sea salt deposition to forests in Sweden and Norway. This is obvious in the soil water chemistry in many of the SWETHRO sites in southern Sweden. In a pine stand in Hjärtsjömåla, in southeastern Sweden, the Cl concentrations were clearly elevated and the pH was lowered during this period.



Read more: Akselsson et al., 2013. Acidification trends in south Swedish forest soils 1986-2008 – Slow recovery and high sensitivity to sea-salt episodes. *Science of the Total Environment* 444: 271-287



In 2005 a severe storm occurred in Sweden, leading to storm-fellings in large areas. In a spruce stand in Timrilt in southwestern Sweden, more than 50% of the trees were storm-felled. This led to a high peak in nitrate concentrations in soil water during a few years. This peak was accompanied by elevated concentrations of inorganic aluminium, due to the acidification caused by the nitrification.

Read more: Hellsten et al., in press. Increased concentrations of nitrate in forest soil water after windthrow in southern Sweden. *In press in Forest Ecology and Management*

In 2008, a bark beetle attack was reported on the SWETHRO site Klippan in southwestern Sweden. The forest in Klippan consisted of 120 years old spruces, mixed with 30% pines. In the winter 2009/10 all spruces were dead. This event led to a very high nitrate peak, up to 20 mg/l. The nitrification led to lowered pH during this period.

