

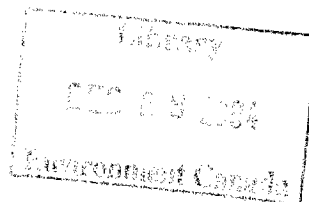
Environment Canada  
Atmospheric Environment Service

**Acid Rain and Snow at Kejimikujik, N.S.  
For 1984**

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Acid Rain and Snow at Kejimikujik, N.S. for 1984

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The Atmospheric Environment Service has operated a daily precipitation sampling station in Kejimikujik National Park in southwestern Nova Scotia since May 1979. Daily precipitation samples are taken at the station and analyzed for pH and the concentration of various chemical constituents, such as sulphates and nitrates.

The pH value is a measure of the acidity of the precipitation. The pH scale ranges from 0 (extremely acidic) to 14 (extremely alkaline). A pH value of 7 is neutral. The scale is logarithmic, so there is a 10-fold difference between integers. For example, a pH of 5 is ten times more acidic than a pH of 6.

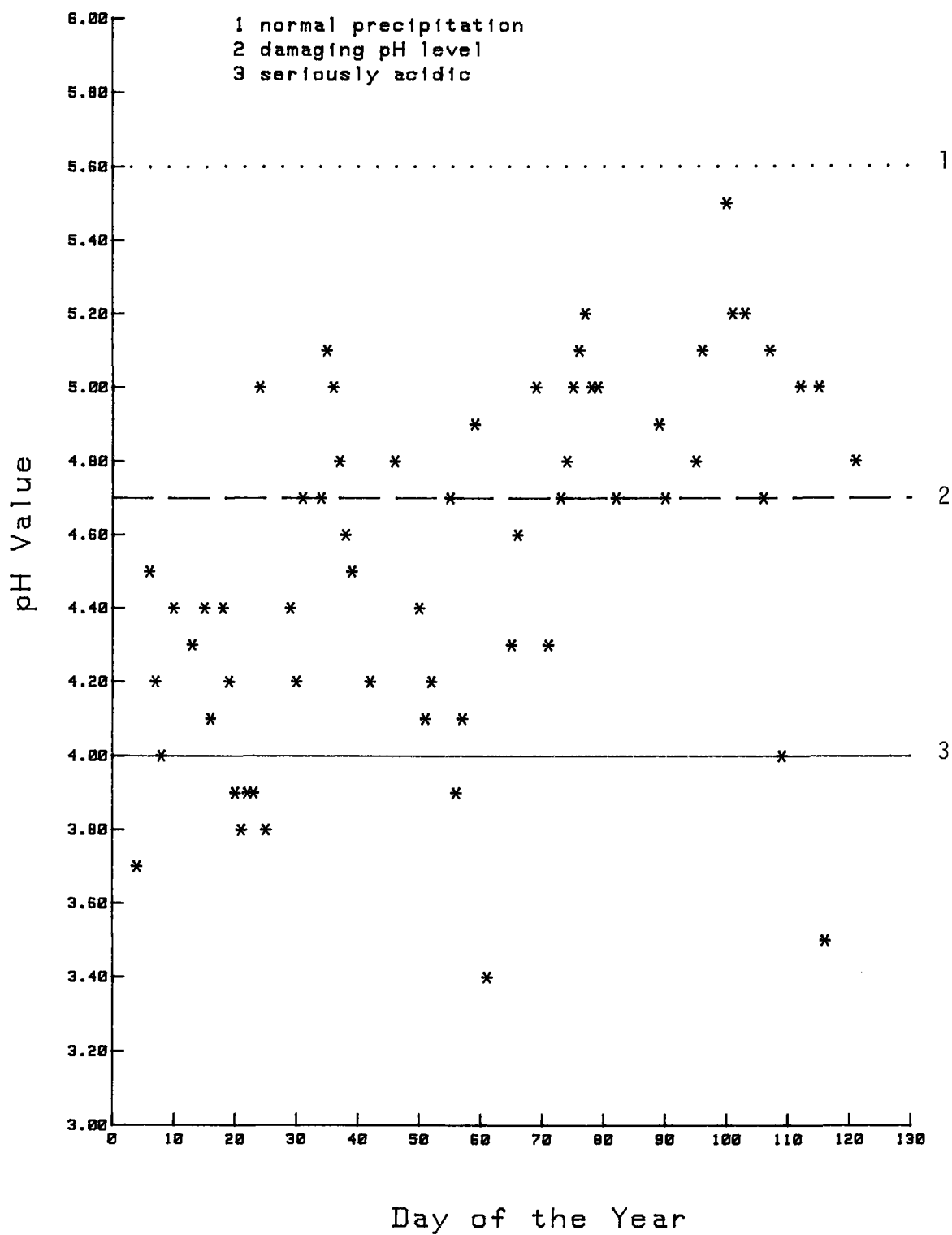
Clean precipitation, which is not contaminated by pollutants, is slightly acidic with a pH of approximately 5.6. Most of eastern Canada receives acid precipitation with pH values averaging between 4.2 and 4.5.

Environmental damage to lakes and streams is usually observed in acid sensitive areas that regularly receive precipitation with pH less than 4.7. Readings of 4.2 and below, for rain or snow, are considered strongly acidic and are not uncommon at Kejimikujik. Readings less than 4.0 indicate serious events, although they do not constitute an immediate danger to human health or property. The effects of acid rain and snow are generally cumulative over time, although fish kills have been observed after low pH rain events and after the melting of acidic snow.

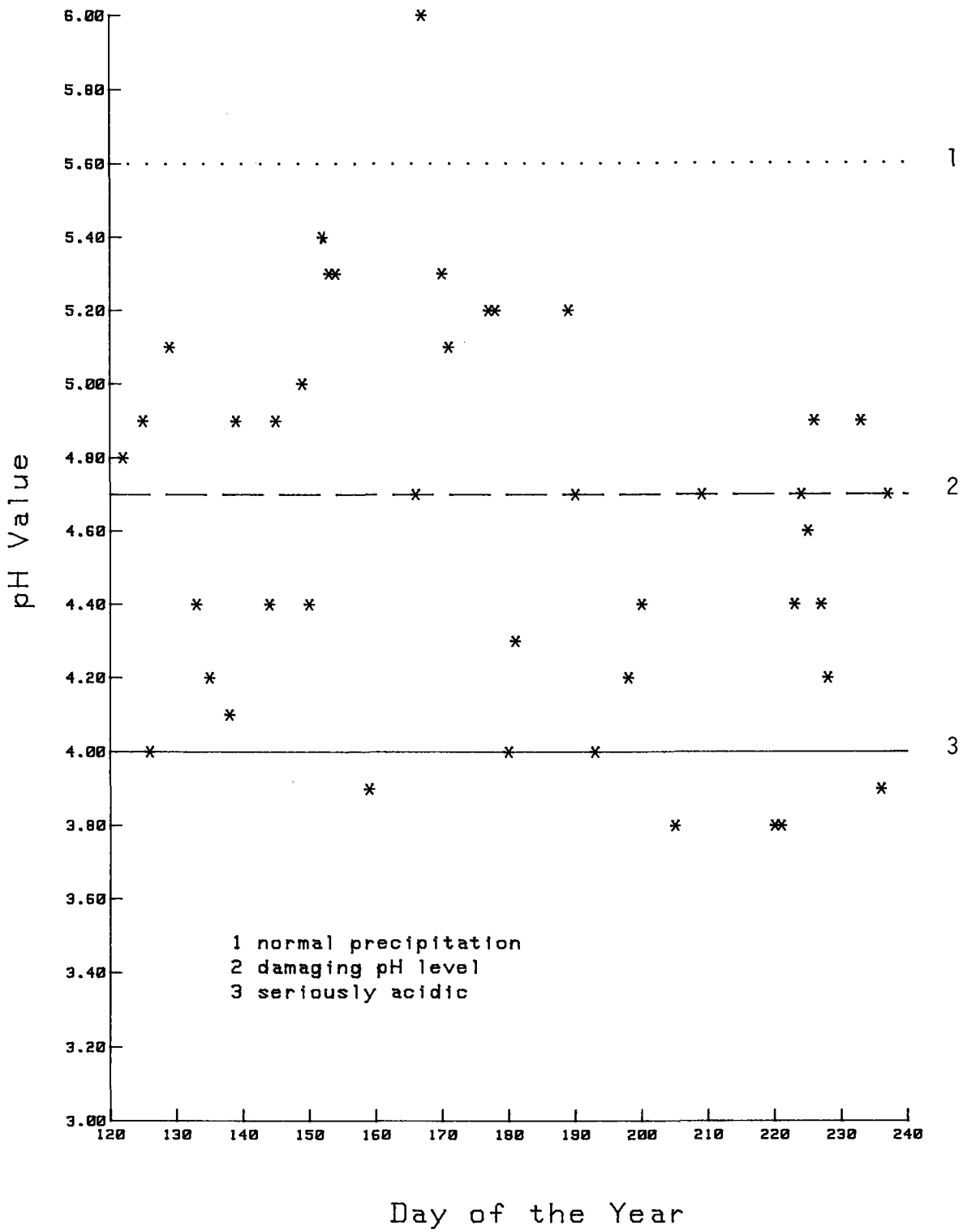
The pH of rain and snow at Kejimikujik for the year of 1984 is plotted on the following three graphs. Graph 1 shows the pH values for precipitation events from January through April 1984. Graphs 2 and 3 show these values from May through August, and September through December, respectively.

The average pH value for a precipitation event in 1984 was 4.3. During the year, more than half the precipitation events were more acidic than pH 4.7, almost 30% of the events were strongly acidic (with pH of 4.2 and below), and 12% were seriously acidic with pH less than 4.0. In January, the month in which more precipitation events occurred than in any other single month, the average pH was 4.1 (strongly acidic).

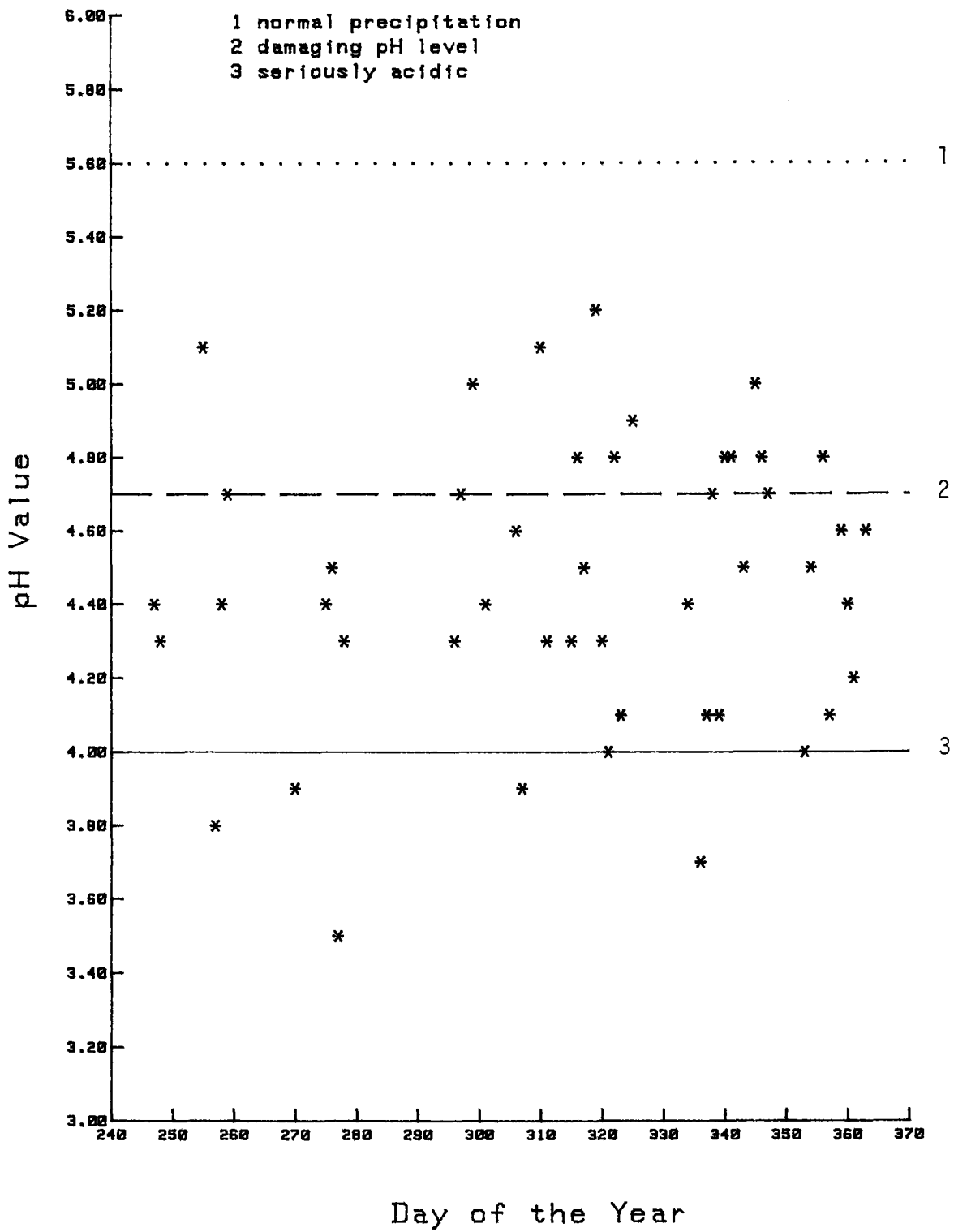
Most of the strongly acidic events during the year had picked up acidifying pollutants from either the U.S. midwest, the U.S. eastern seaboard, Ontario, or southern Quebec. For example, considering the three most acidic events of the year, the first two cases, recording pH values of 3.4 and 3.5, resulted from air that had passed over the eastern seaboard. The third case resulted in a pH of 3.5 with the air mass responsible originating in northeastern Ontario and passing over southern Quebec and Maine. In contrast, the "cleanest" precipitation events, with pH 5.3, 5.5 and 6.0 (close to unpolluted precipitation) were produced from air masses originating and travelling over northern Quebec, Labrador, New Brunswick or the Atlantic Ocean.



Precipitation at Kejimikujik, N.S.  
January - April 1984



Precipitation at Kejimikujik, N.S.  
 May - August 1984



Precipitation at Kejimikujik, N.S.  
September - December 1984