J2.7 ARCTIC CHANGE DETECTION WEBSITE

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1. INTRODUCTION

The Arctic is a vast, ice-covered ocean that is surrounded by treeless, frozen land, which is often covered with snow and ice. Nonetheless, the Arctic is an ecosystem that teems with life, including organisms living in the ice, fish and marine mammals living in the sea, birds, land animals such as wolves, caribou and polar bears, and human societies. NOAA's Arctic Research Office has developed an Arctic Change website to provide information on the present state of Arctic ecosystems and climate in historical context (Figure 1, http://www.arctic.noaa.gov/detect). The website presents a suite of indicators based on the findings of the Arctic Climate Impact Assessment (ACIA) Report (ACIA Report, 2004), which is an expert evaluation representing a multi-year, multi-government effort by hundreds of scientists. With results and indicators on current Arctic status, and the rate and extent of change in the Arctic, the Arctic Change website is a near-realtime update to the ACIA effort that raises issue awareness, informs dialog, and supports decision making.

2. THE ARCTIC CHANGE WEBSITE

The objective of the Arctic Change website is to present recent indicators that describe the present state of the Arctic climate and ecosystem in an accessible, understandable, and credible historical context. A narrative style is coupled with selected, representative time series and spatial data to highlight land and marine ecosystems, the cryosphere, Arctic and sub-Arctic human impacts.

A Table of Indicators (Figure 2) provides an overview of the current status of the Arctic from 1970 to the present. The selected time series represent four indicator types (climate, land, marine, ecosystems). The combined indicators are the result of a mathematical analysis (principal component analysis) which resolves the trends in all the time series into two major components. Red colors indicate the large changes in recent years (largest 1/3 of values in the record). The middle third are shown in grey and the lowest third are shown in green. Changes in the last decade are continuing, major and unprecedented. Detailed information about each indicator can be found in the different sections of the website (Figure 3).

3. SUMMARY

The NOAA Arctic Change web product builds on the 10 key findings, 19 climate trends, and 10 society impacts enumerated in the ACIA Report. The ACIA Report and this web site are useful for managers, scientists, and a broader audience because the credibility of the process is based on multiple lines of evidence; using such a procedure balances problems caused by having too many indicators which lack specificity, or too few indicators which do not consider the complexity of the process nor provide a robust result.

The Arctic Change website is available at http://www.arctic.noaa.gov/detect, and all background information is available to the reader/user. Results from this project are tailored toward ready understanding of the rate and extent of change in the Arctic to facilitate informed decisions concerning the impacts which result. The Arctic Change website provides non-Arctic climate scientists with a quick and definitive update on the status of the Arctic climate.

4. REFERENCES

Arctic Climate Impact Assessment (ACIA), 2004, http://www.acia.uaf.edu/.

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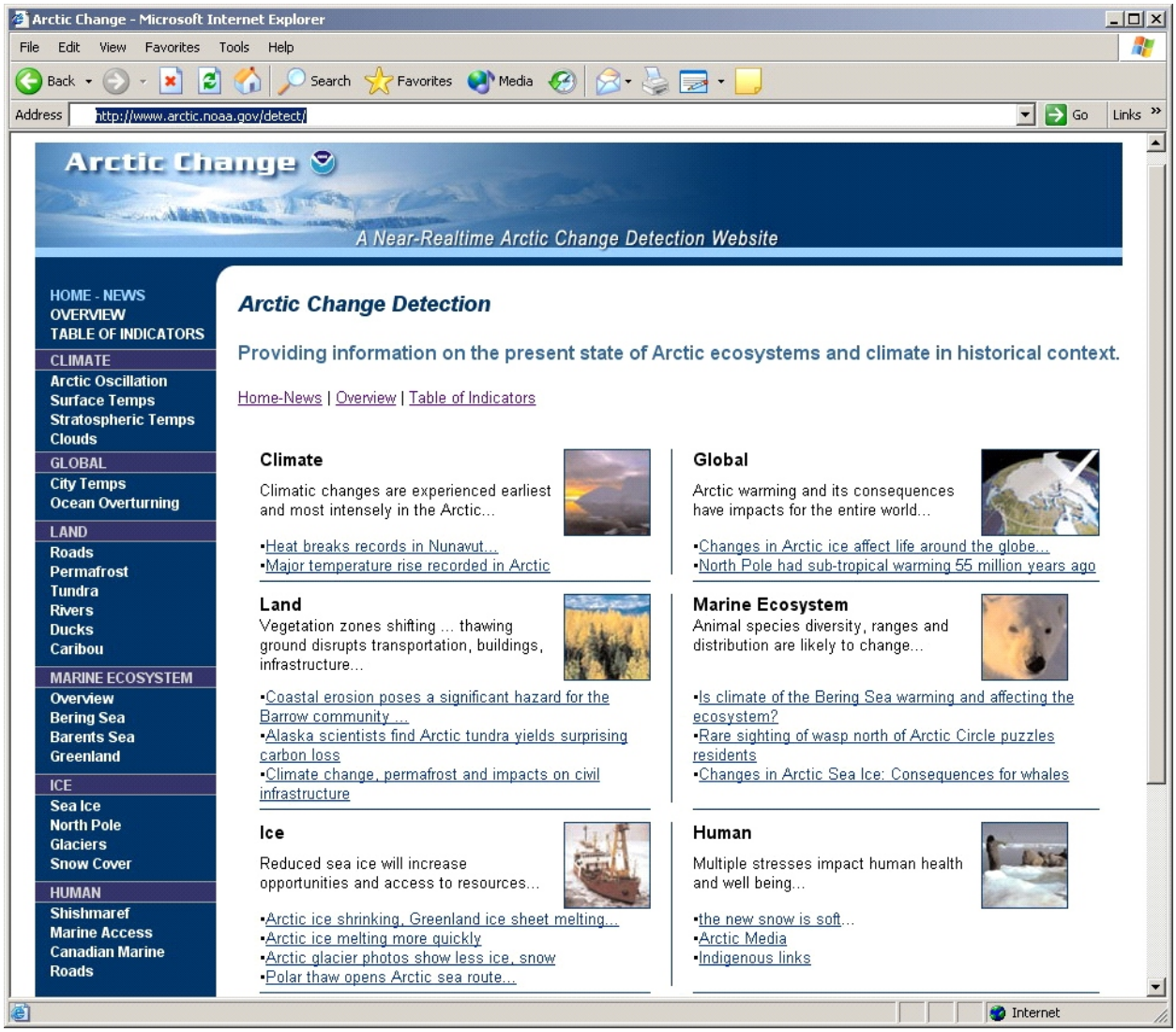

Figure 1. Screen snapshot of the Arctic Detection website.

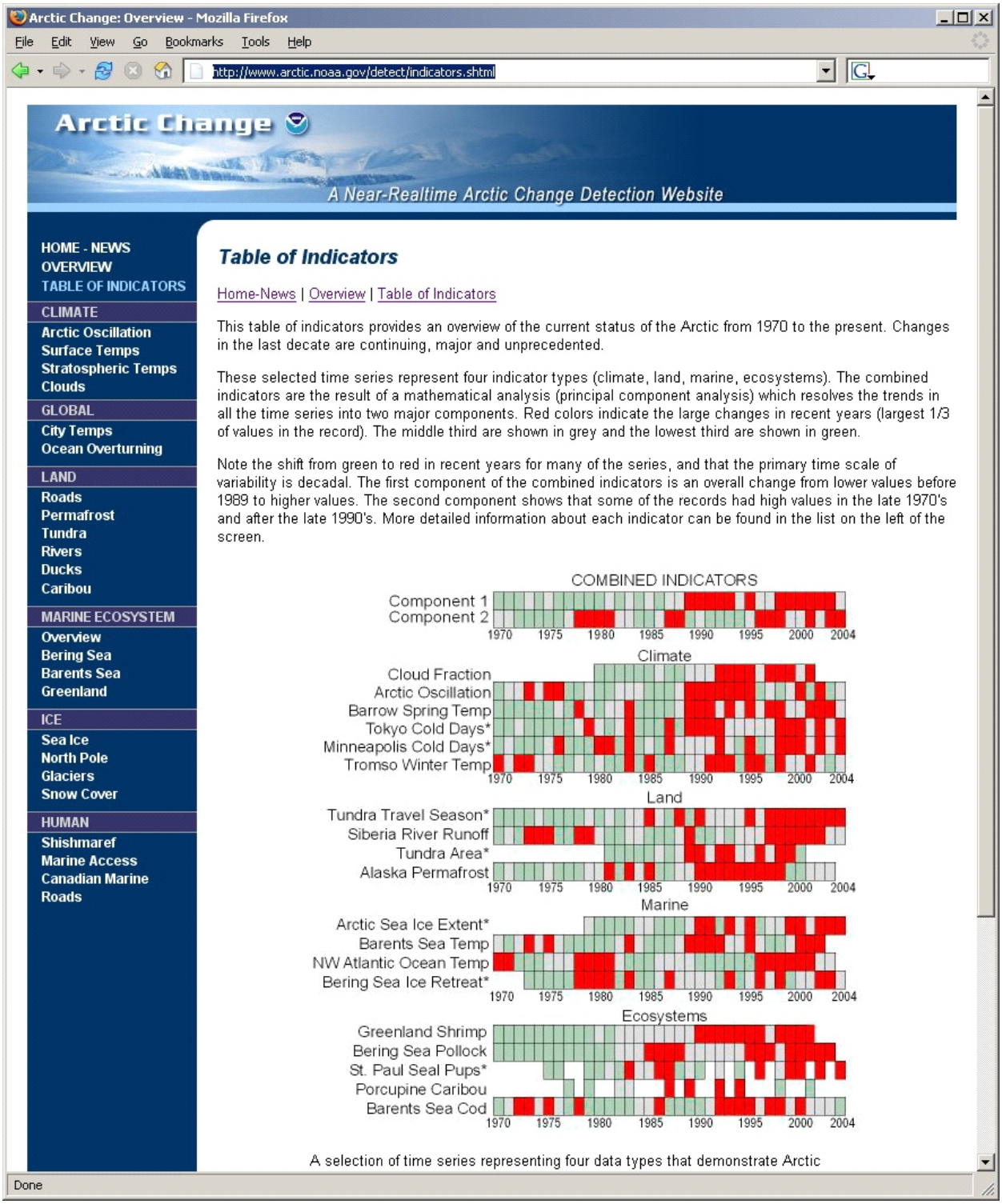

Figure 2. Table of Indicators from the Arctic Detection website.

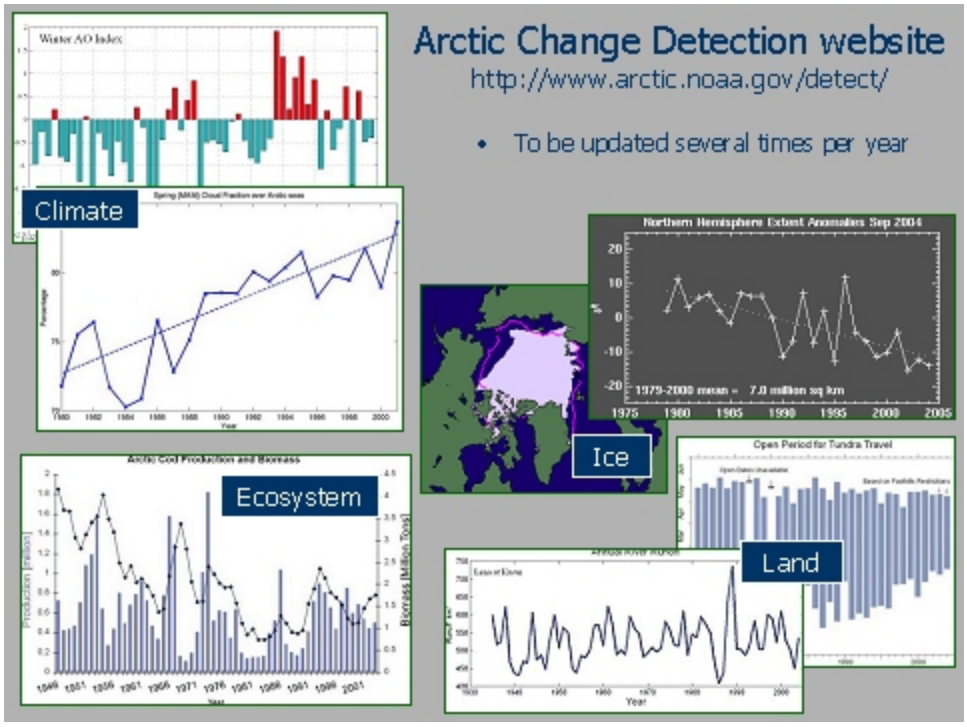

Figure 3. Sample indicator time series presented in the Arctic Change website.