Supporting Information for

When Can Ocean Acidification Impacts be Detected from Decadal Alkalinity Measurements?

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Contents of this file

See: Additional Supporting Information.

Additional Supporting Information (Files uploaded separately)

Caption for Dataset 1.

Introduction

We have submitted, as supplementary information, the processed model output required to recreate our figures and calculations. Due to data storage and transfer limitations, it was impractical to submit the unprocessed raw model output. However, those interested in working with model ensemble output are encouraged to contact JPD or TLF regarding Setup-1 and KBR regarding Setup-2 as described in the manuscript. Contact BRC for general inquiries.

Data Set S1 (OA_Trend_Detection_SI.mat and OA_Trend_Detection_SI.nc)

OA_Trend_Detection_SI is a supporting information datafile in the .nc and .mat (hdf5) formats accessible to users of MATLAB, Python, R, and numerous other free and commercial programs. The datafile has several data array subfiles including [array dimensions in brackets]:

1. SeasonalVariabilitiesAT [360x200x50]… standard deviations of monthly data within years calculated as described in the manuscript,

2. SeasonalVariabilitiesAlkStar [360x200x50] … standard deviations of monthly data within years calculated as described in the manuscript,

3. InternalVaraibilitiesAT [360x200x50] … ensemble standard deviations calculated as described in the manuscript,

4. InternalVariabilitiesAlkStar [360x200x50] … ensemble standard deviations calculated as described in the manuscript,

5. A [360x200x50x12]… ensemble-mean decadal-mean A_T for setup 1,

6. AStar [360x200x50x12] … ensemble-mean decadal-mean Alk^* for setup 1,

7. and N [360x200x50x12] … ensemble-mean decadal-mean N for setup 1.

Three dimensional arrays are longitude, latitude, depth. Four dimensional arrays are longitude, latitude, depth, decade. Longitude spans -279.5 (first index) to 79.5 (last index) °E at 1° intervals. Latitude spans -81.5 (first index) to 89.5 (last index) °N at 1° intervals. Depth surfaces (in m) are:

5 (first index)

15

25

35

45

55

65

75

85

95

105

115

125

135

145

155

165

175

185

195

205

215

225

236.122817993164

250.599975585938

270.620819091797

298.304931640625

335.675628662109

384.634277343750

446.936645507813

524.170593261719

617.736328125000

728.828491210938

858.421508789063

1007.25708007813

1175.83483886719

1364.40625000000

1572.97131347656

1801.27868652344

2048.82861328125

2314.87915039063

2598.45629882813

2898.36523437500

3213.20581054688

3541.38989257813

3881.16210937500

4230.62060546875

4587.74267578125

4950.40869140625

5316.42871093750 (last index)

Time indices correspond to 1990 through 2000 (first index) to 2090 through 2100 (penultimate index) at 10 year intervals. The final index contains values from the year 2100 only.