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Interactive comment on "Plant colonization, succession and ecosystem development on Surtsey with reference to neighbouring islands" *by* B. Magnússon et al.

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General comments. This paper reports on the development of the biota on the volcanic island Surtsey 50 years after it emerged from sea, and relates it to two old neighbouring islands. The dataset obtained from annual monitoring of the biota on Surtsey island since shortly after the eruption in 1963 is very valuable for advancing our knowlegde on primary succession. Until in recent years, the knowledge gathered has mainly been published in the Surtsey Research and although available in an open access (http://surtsey.is/pp_ens/write_ref_2.htm), it has a limited impact internationally. The special issue in Biogeosciences is therefore greatly welcomed. The paper reads well and is a good contribution to existing literature.

Specific comments. Introduction - The paper is mostly well focused. However, I think

the paper would benfit with some more work on the introduction. The first paragraph is rather weak, and the context of its last sentence is somehow lost. What do authors mean with "...most comparable studies are from tropical and temperate regions."? Comparable to what? Consider to expand on the issue of primary succession here, and elaborate on why Surtsey island is important for understanding for instance successional processes. The last paragraph of the introduction describes well what the paper is about. I miss though clear objectives at the end. Methods - The additional permanent plots established on the two neighbouring islands are adding much to the study and provides an opportunity to consider the vegetation development on Surtsey island in a wider context, and supports a better prediction of future development on the island. There were four plots established on each of the two islands. There is no argument of why this number, and how their locations were chosen. On page 7 (l. 21-22) it says that total moss and lichen cover were recorded. These data are, however, not reported in the paper hence not needed here. Results - Consider to revise the last paragraph on the results of ordination. Report more clearly on the results, e.g. eigenvalues, gradient length. Authors do not make the most out of their results and for instance do not use the opportunity they have to relate the ordination axes to environmental variables. Neither do they take the analysis further and do constrained ordination (CCA) in which they can relate environmental variables directly to the species composition, and/or assign relative variation to different components.

Technical corrections. There is a need for careful reading with focus on citations and the list of references. Some examples. References not cited in the text but included in the list of references: Del Moral, R., Wood, D.M., and Titus J.H. 2005 (p. 23, l. 10). Fridriksson, S. 1978 (p. 23, l. 24). Fridriksson, S. 2005. (p. 23, l. 27). Fridriksson, S. And Magnússon, B. 1992 (p. 23, l. 31). Jakobsson, S.P. 1979 (p. 25, l. 1). References cited in the text but not included in the list of references: Sekercioglu, 2006 (p. 17, l. 26). Stefánsdóttir et. al. (p. 18, l. 17). Two references in the list can not be distinguished when cited in the text as a and b after the publication year are missing. These are: Fridriksson, S., Bjarnason, Á.H., and Sveinbjörnsson, B. 1972 (p. 24, l. 1).

Fridriksson, S., Sveinbjörnsson, B., and Magnússon, S. 1972 (p. 24, l. 3). There occur some inconsistency between citing and list of references: DeGange, 2010 in the text (p. 3, l. 25) while DeGange et. al. 2010 in the list (p. 23, l. 1). Hansen et al. 2011 in the text (p. 8, l. 22) while Hansen et al 2009 in the list (p. 24, l. 11). If not correct reference then Hansen et al. 2011 is missing in the list. McCune and Mefford, 2006 in the text (p. 9, l. 17) but 2011 in the list (p. 25, l. 30). Calvino-Cancela and Martin Herrero, 2009 in the text (p. 16, l. 16) while Calvino-Cancela and Martin-Herrero, 2009 in the list (p. 22, l. 17). Hence hyphern missing in the latter name in the list of references.

Some suggestions: P. 6, l. 21: "were also" replaced with "have also been". P. 8, l. 7: "was" replaced with "has since 1999 been" and then "since 1999" deleted. P. 8, l. 11: "a long" replaced with "along". P. 8, l. 18: "L. argenteus" replaced with "L. argentatus". P. 9, l. 11: "was" replaced with "were". P. 9, l. 13: "was" replaced with "were!. P. 10, l. 25: "and" should be deleted. P. 13, l. 2: Consider to reword "there4 was a fivefold and significant difference". P. 13, l. 13: "was" replaced with "were". P. 13, l. 20: "larger" replaced with "the largest" or delete "far" in l. 19. P. 13, l. 26: "was highest in" replaced with "had the highest" P. 14, l. 20: "In the fourth Twinspan-group were Surtsey plots which were located" replaced with "The fourth Twinspan-group consisted of (or contained) Surtsey plots located".

Figure 3: Authors divide plant colonisation into four main periods in the text (p. 10, l. 10). Consider to show these periods on the graph. I think it would be helpful. Use of the word invasion – p. 10, l. 10 (the initial invasion of planst occurred during the first decade), and p. 16, l. 5 (the invasion of the seagulls). Consider to use a different word here as the word invasion has a certain meaning in ecology. Page 11, line 17: I suggest to replace "The most notable changes" with "The most notable changes since 2008" as authors show in figure 5 relative frequency of vascular species in two years, 2008 and 2010.

Interactive comment on Biogeosciences Discuss., 11, 9379, 2014.