

Greenlandic Inuktitut (a.k.a. Greenlandic Eskimo) is an Inuit language of the Eskimo-Aleut family spoken in Greenland. Greenlandic Inuktitut has five surface vowels [i e a o u], as seen in the following representative data:

ivnaq	'bluff'	ine	'room'	sakiak	'rib'
ikusik	'elbow'	orpik	'bear'	nanoq	'bear'
iperaq	'harpoon strap'	sermeq	'glacier'	isse	'eye'
sava	'sheep'	aveq	'walrus'	nerdloq	'goose'
qilaluvaq	'white whale'	sako	'tool'	ugsik	'cow'
nuna	'land'	qasaloq	'bark'	itumaq	'palm (hand)'
iseraq	'ankle'	iga	'pot'	igdlo	'house'
qatigak	'back'	tuluvaq	'raven'	marraq	'clay'
imaq	'sea'	ennit	'waters'		

(Schultz-Lorentzen 1945; Kenstowicz and Kisseberth 1979)

Carefully describe the environments in which each of the five vowels appear, making sure to discuss any regularities, repeated patterns, and natural classes.

Decide what the best underlying vowel system is for Greenlandic Inuktitut, and defend your decision by comparing it to obvious logical alternatives, appealing to simplicity and/or naturalness as appropriate. There are at least three coherent, reasonable ways to phonemicize the Greenlandic Inuktitut vowels, so you should be seriously considering at least two logically plausible alternatives to your analysis. Be sure to cite relevant data, especially (near-)minimal pairs.

If you propose an underlying vowel system with fewer than five vowel phonemes, describe in explicit prose what rule or rules are needed to derive the unfaithful surface vowels, and then formalize your rule(s) in autosegmental tree form. (You may also formalize your rule(s) in linear form for expositional clarity and/or for comparison, but it's not necessary.)

Finally, give full derivations for a representative set of words, showing how all five surface vowels are derived in your analysis.