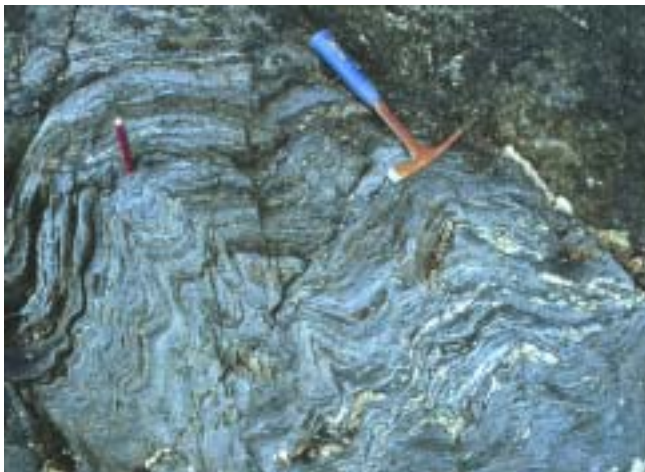


U.S. DEPARTMENT OF THE INTERIOR U.S. GEOLOGICAL SURVEY

Outcrop Structural Data From Wales Group and Adjacent Rocks, Dall and Prince of Wales Islands, Southeastern Alaska

by

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Abstract

This report presents a compilation of 3224 measurements of outcrop structures from Wales Group and adjacent strata on Dall and Prince of Wales Islands, southeastern Alaska. We collected 2230 measurements, an additional 344 were digitized from the map of Eberlein and others (1983), and an additional 650 come from the map of Herreid and others (1978). These data are listed in Excel spreadsheet, tab-delimited, and PDF formats. The data includes the latitude and longitude of each measurement, the type of measurement and its orientation.

Introduction

Outcrop-scale structural data is vital for understanding the structural history of rocks. Raw structural data is typically not available for additional structural analysis or display on maps, and thus we publish it here. We will publish a further analysis of this and complimentary structural data. This report is a compilation of structural data from Wales Group and adjacent rocks from Dall Island and Prince of Wales Island, southeastern Alaska. Outcrop data come from fieldwork conducted by Haeussler and Karl in the summer of 2000. Additional data were digitized from the geologic maps of Herreid and others (1978) and Eberlein and others (1983) (Fig. 1). From these maps, only bedding, overturned bedding, and S1 orientations were compiled, although the Herreid and others (1978) map displays some additional structural data.

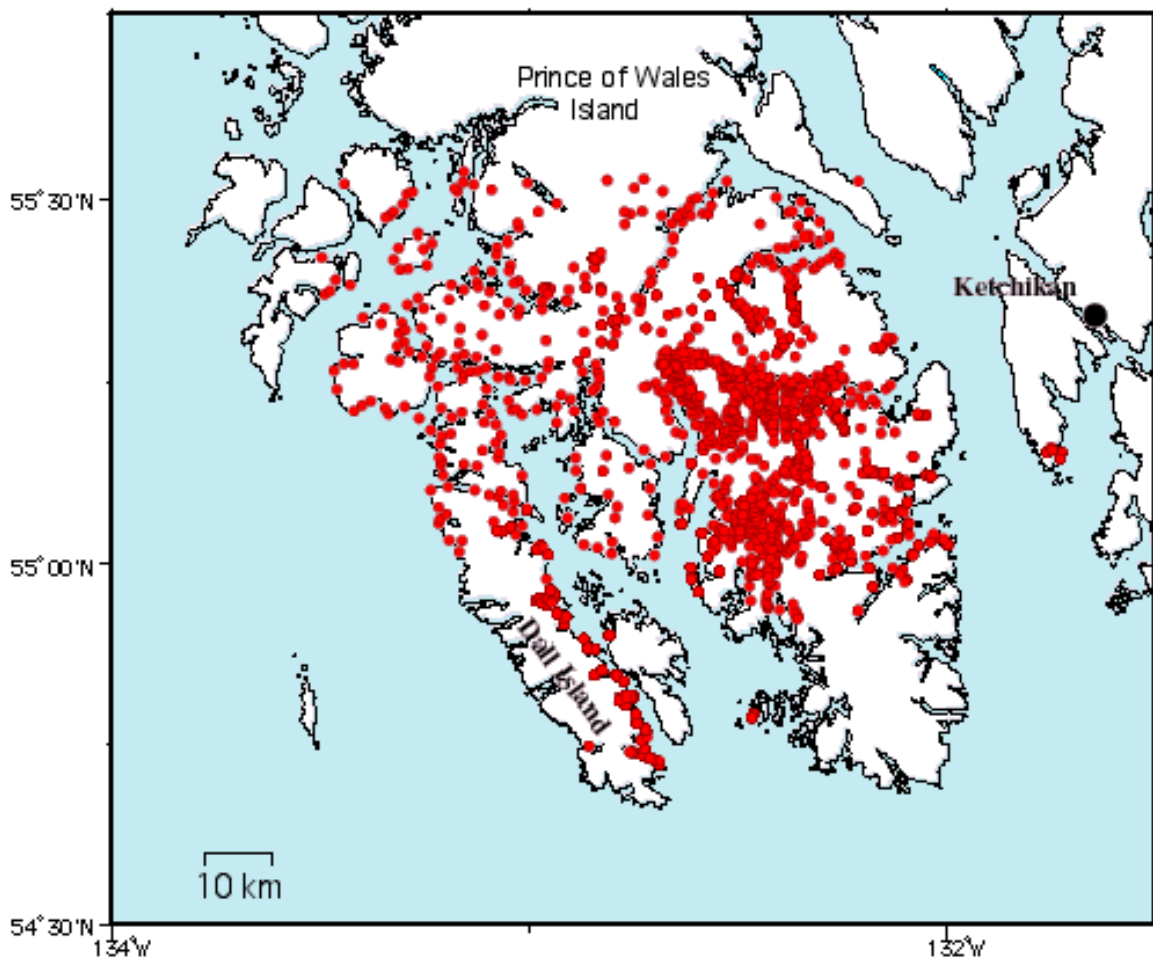


Figure 1. Map showing location of data compiled for this report, in southern southeastern Alaska. Dots show location of measurements in data file.

Explanation of Data Table

The data table has the following headings. 'station' refers to the station number where the measurement was made, or a reference to the original source of the data. The Haeussler and Karl data was collected in the year 2000, thus the '00' is at the front of the station number. 'PH' refers to Peter Haeussler's stations, and 'SK' refers to Sue Karl's measurements. 'Herreid' is listed as the source for data pulled from his map, and 'Churkin' is listed for data from the Eberlein and others (1983) map. For the remaining columns, 'lat' refers to latitude in degrees and decimal degrees, and 'long' refers to longitude in degrees and decimal degrees. For the Haeussler and Karl data, the latitude and longitude were determined by handheld GPS measurement or by use of a graticule on a topographic map. The explanation of abbreviations used in the 'structure' column is listed in a separate section, below. The next two columns are strike and dip or trend and plunge. Both strikes and trends vary between 0° and 360°, and dip and plunge range from 0° to 90°. The strike and dip of planar data is listed according to the 'right-hand rule' or, as one looks along the strike direction, the surface dips to the right. F1 folds refer to folds of bedding, F2 folds refer to folds of cleavage or schistosity, F3 are refolded S2 surfaces. A D1, D2, D3 deformational hierarchy was not worked out or assumed, with the exception of where refolding relationships could be observed.

Structures Types Compiled

The following is a list of 108 structure types measured. Some of these divisions can be grouped for easy of manipulating the data, but we considered it best to present as many different divisions of the data, and leave it to the researcher to lump these together as needed.

Below is an extended description of the abbreviation in the 'structure' column in the table.

boudin – trend and plunge of a boudin neck (n=63)
boudin of boudin – trend and plunge of a boudinaged boudin (n=3)
boudin, dike – trend and plunge of boudinaged dike, dike age indeterminate (n=2)
boudin, old dike – trend and plunge of boudinaged dike, and dike appears old (n=3)
boudin, orthogneiss – trend and plunge of boudinaged orthogneiss sill (n=6)
boudin, qtz vein – trend and plunge of boudin of a quartz vein (n=13)
C plane – strike and dip of C plane in S-C structure (n=7)
dike, amphibolite cuts pyroxenite – strike and dip of dike, as described (n=5)
dike, deformed, int – strike and dip of deformed, intermediate composition dike (n=2)
dike, D-O – strike and dip of Ordovician-Devonian dike (n=5)
dike, felsic – strike and dip of felsic dike (n=1)
dike, intermediate – strike and dip of intermediate composition dike (n=3)
dike, K? – strike of dip of intermediate medium to coarse-grained dike, similar to Cretaceous intrusives (n=3)
dike, K?-amphibolite – strike and dip of amphibolite dike, possibly Cretaceous (n=1)
dike, mafic – strike and dip of mafic dike, possibly Tertiary, probably older (n=5)

dike, old – strike and dip of a pre-Cretaceous dike (n=2)
dike, old, felsic – strike and dip of a felsic pre-Cretaceous dike (n=2)
dike, old, int – strike and dip of an intermediate pre-Cretaceous dike (n=2)
dike, old, mafic – strike and dip of probable late Proterozoic-Cambrian mafic dike (n=24)
dike, post folding, boudinaged – strike and dip of post-folding, but subsequently
boudinaged dike (n=1)
dike, postdefm, mafic – strike and dip of pre-Tertiary post-deformational mafic dike
(n=1)
dike, pre/post defm – strike and dip of dike that post dates one deformation, but pre dates
another (n=1)
dike, predefm – strike and dip of deformed dike (n=4)
dike, predefm, felsic – strike and dip of deformed felsic dike (n=1)
dike, predefm, int – strike and dip of deformed intermediate dike (n=3)
dike, predefm, mafic – strike and dip of deformed mafic dike (n=3)
dike, preT, mafic – strike and dip of pre-Tertiary mafic dike (n=3)
dike, T – strike and dip of Tertiary dike, these are usually mafic (n=27)
dike, T, felsic – strike and dip of felsic Tertiary dike (n=3)
dike, T, int – strike and dip of intermediate dike (n=18)
dike, T, latest stage – strike and dip of Tertiary dike that cuts older Tertiary dike (n=1)
dike, T, mafic – strike and dip of Tertiary mafic dike (n=72)
dike, ultramafic, cuts mafic dike – strike and dip of ultramafic dike cutting an older mafic
dike (n=1)
ext calc vein – strike and dip of calcite vein perpendicular to layering (n=3)
ext feld vein – strike and dip of feldspar vein perpendicular to layering (n=3)
ext qtz vein – strike and dip of quartz vein perpendicular to layering (n=36)
extqtzvn/s1 – trend and plunge of intersection lineation between extensional quartz veins
and the S1 foliation. This is kinematically equivalent to a boudin (n=15)
F1 axial surface – strike and dip of axial surface of F1 fold (n=4)
F1 axis – trend and plunge of F1 fold axis (n=64)
F1 axis, ccw – trend and plunge of F1 fold axis with counterclockwise asymmetry (n=1)
F1 axis, cw – trend and plunge of F1 fold axis with clockwise asymmetry (n=2)
F1 intrafolial – trend and plunge of intrafolial F1 fold axis (n=19)
F2 axial surface – strike and dip of axial surface of F2 fold (n=5)
F2 axial surface, kinky – strike and dip of ‘kinky,’ or chevron style, folds. These are
probably Cretaceous in age (n=20)
F2 axis – trend and plunge of F2 fold axis (n=208)
F2 axis, ccw – trend and plunge of F2 fold axis with counterclockwise asymmetry (n=20)
F2 axis, cw – trend and plunge of F2 fold axis with clockwise asymmetry (n=12)
F2 axis, kinky – trend and plunge of ‘kinky,’ or chevron style, fold (n=26)
F2 axis, m – trend and plunge of M fold axes at crest of F2 fold (n=4)
F3 axis – trend and plunge of F3 fold axis (n=2)

fault – strike and dip of a discrete fault with unknown sense of offset (n=21)
fault zone – strike and dip of a fault zone (n=7)
fault zone boudin – trend and plunge of a boudin in a fault zone (n=4)
fault zone fold – trend and plunge of a fold in a fault zone (n=6)
fault zone, fol – strike and dip of foliation in a large fault zone (n=5)

fault zone, wg/Pz – strike and dip of a fault zone that juxtaposed Wales Group with Paleozoic rocks (n=1)
 fault, cuts pluton – strike and dip of a fault with unknown sense of offset that cuts a pluton (n=1)
 fault, left-lateral – strike and dip of left-lateral fault (n=20)
 fault, left-lateral? – strike and dip of possible left-lateral fault (n=2)
 fault, normal – strike and dip of normal fault (n=3)
 fault, normal, early – *in situ* strike and dip of syndepositional normal fault (n=1)
 fault, right-lateral – strike and dip of right-lateral fault (n=18)
 fault, right-lateral? – strike and dip of possible right-lateral fault (n=3)
 fault, strike-slip – strike and dip of a strike-slip fault (n=4)
 fault, thrust – strike and dip of thrust fault (n=9)
 fault, thrust? – strike and dip of possible thrust fault (n=7)
 fol, high T, magmatic – strike and dip of high temperature magmatic foliation in an intrusive rock (n=6)
 fol, high T, submagmatic – strike and dip of high temperature of submagmatic foliation in an intrusive rock (n=11)
 fol, low T, submagmatic – strike and dip of low temperature submagmatic foliation in an intrusive rock (n=17)
 fold axis, in old felsic dike – trend and plunge of a fold axis in an ‘old’ probably pre-Cretaceous felsic dike (n=1)
 fractures – strike and dip of fractures, only measured where notably strong (n=13)
 fractures, epidote – strike and dip of epidote-filled fractures (n=1)
 fractures, sinistral – strike and dip of fractures with a small amount of sinistral offset (n=3)
 magmatic layering – strike and dip of magmatic layering in an intrusive (n=5)
 mineral lineation – trend and plunge of metamorphic mineral lineation (n=13)
 mullions, fault – strike and dip of fault zone mullions (n=1)
 mylonitic fol – strike and dip of mylonitic fault zone (n=8)
 mylonitic lineation – trend and plunge of mylonitic lineation (n=8)
 paleoslope-in situ – trend and plunge of *in situ* paleoslope direction (n=1)
 quartz fibers – trend and plunge of quartz fibers (n=3)
 S plane – strike and dip of S plane where S-C fabric was observed, same as S1 foliation (n=3)
 s-c transport dir – trend and plunge of shear direction based on S-C fabric (n=6)
 s0 – strike and dip of bedding, facing direction unknown (n=703)
 s0 overturned – strike and dip of overturned bedding (n=18)
 s0 upright – strike and dip of upright bedding (n=58)
 s0/s1 – trend and plunge of intersection lineation between bedding and cleavage (n=52)
 s1 – strike and dip of foliation or cleavage (n=1242)
 s2 – strike and dip of S2 foliation (n=9)
 shear fabric – strike and dip of shear fabric (n=5)
 shear lineation – trend and plunge of lineation on shear fabric surface (n=3)
 shear zone – strike and dip of shear zone (n=8)
 shear zone fold axis – trend and plunge of fold axis in a shear zone (n=2)
 shear zone, min lin – trend and plunge of mineral lineation in a shear zone (n=1)

shear zone, left-lateral – strike and dip of left-lateral shear zone (n=7)
shear zone, thrust – strike and dip of thrust shear zone (n=1)
shear, epidote – strike and dip of an epidote filled shear (n=1)
sheath fold – trend and plunge of a sheath fold (n=1)
sill, mafic – strike and dip of mafic sill (n=1)
sill, old, felsic – strike and dip of old, felsic sill (n=1)
sill, old, mafic – strike and dip of old, mafic sill (n=1)
slickenlines – trend and plunge of slickenlines, sense of offset unknown (n=1)
slickensides, left-lateral – trend and plunge of slickensides on a left-lateral fault (n=3)
slickensides, right-lateral – trend and plunge of slickensides on a right-lateral fault (n=4)
slickensides, thrust – trend and plunge of slickensides on a thrust fault (n=2)
slump fold axis – trend and plunge of slump fold axis (n=2)
slump fold axis, ccw – trend and plunge of slump fold axis with counterclockwise
asymmetry (n=7)
slump fold axis, cw – trend and plunge of slump fold axis with clockwise asymmetry
(n=16)
stretching lin – trend and plunge of a stretching lineation (n=110)

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