

Whale Path Visualization

This script performs a group calculation to find range of latitude values for each whale in the Blue Whale dataset. Then, a single whale is selected and the path for that whale is visualized on a map.

```
load cleanWhaleData whales
whalesSummary = groupsummary(whales, "ID", "range", "latitude");
whalesSummary = sortrows(whalesSummary, 'range_latitude', 'descend')
```

whalesSummary = 140×3 table

	ID	GroupCount	range_latitude
1	2008CA-Bmu-04176	259	34.6520
2	2007CA-Bmu-01385	264	34.4950
3	2005CA-Bmu-10821	276	33.2080
4	2000CA-Bmu-01386	186	31.6870
5	2000CA-Bmu-01390	126	30.5800
6	2004CA-Bmu-04175	177	29.3870
7	2005CA-Bmu-01390	260	28.7470
8	2005CA-Bmu-10829	309	28.6470
9	2000CA-Bmu-10828	20	28.4320
10	2006CA-Bmu-02083	329	27.9980
11	1998CA-Bmu-10823	226	27.9360
12	1999CA-Bmu-04172	166	27.3960
13	2000CA-Bmu-10832	265	26.9310
14	2007CA-Bmu-23043	194	25.9640
15	2007CA-Bmu-05801	136	25.8410
16	2006CA-Bmu-10840	24	24.9870
17	2007CA-Bmu-05670	80	24.8680

	ID	GroupCount	range_latitude
18	1995CA-Bmu-23040	126	24.8250
19	2006CA-Bmu-00832	149	23.5940
20	2006CA-Bmu-10831	239	23.4340
21	2008CA-Bmu-00825	355	23.4110
22	2004CA-Bmu-10843	330	23.4030
23	2008CR-Bmu-01388	301	22.9580
24	2004CA-Bmu-10821	240	22.7190
25	2008CR-Bmu-00846	337	22.6440
26	2007CA-Bmu-10838	256	22.5600
27	2004CA-Bmu-00840	307	22.3780
28	2008CA-Bmu-01386	315	21.6030
29	2006CA-Bmu-23036	69	21.1180
30	1998CA-Bmu-04175	167	20.5010
31	1998CA-Bmu-00823	122	19.2020
32	1999CA-Bmu-10824	141	19.1760
33	1999CA-Bmu-23043	401	18.7110
34	2006CA-Bmu-00838	38	17.3420
35	2006CA-Bmu-10839	65	15.4120
36	1999CA-Bmu-00834	124	15.1520
37	2005CA-Bmu-00834	231	14.6340
38	2007CA-Bmu-04174	330	14.6180

	ID	GroupCount	range_latitude
39	2008CA-Bmu-10821	144	14.4900
40	2004CA-Bmu-00834	61	14.4760
41	1995CA-Bmu-04176	45	14.3570
42	1999CA-Bmu-23033	20	14.1570
43	1999CA-Bmu-04176	225	13.9690
44	1998CA-Bmu-04174	161	13.7700
45	1999CA-Bmu-00838	261	13.4780
46	2001MX-Bmu-10831	234	13.1470
47	2005CA-Bmu-10820	89	12.5360
48	1999CA-Bmu-23031	25	11.7430
49	1999CA-Bmu-23030	173	11.6530
50	2007CA-Bmu-00831	193	11.6450
51	2006CA-Bmu-04175	89	11.5480
52	2004CA-Bmu-10833	221	11.4730
53	2000CA-Bmu-23029	53	11.3450
54	2008CA-Bmu-00830	190	11.0060
55	1999CA-Bmu-04173	29	10.9910
56	1998CA-Bmu-00824	32	10.8430
57	2002MX-Bmu-00837	96	10.5610
58	2008CA-Bmu-04177	210	10.0300
59	2004CA-Bmu-23034	191	9.0840

	ID	GroupCount	range_latitude
60	1995CA-Bmu-23042	27	8.9680
61	1995CA-Bmu-04173	53	8.9540
62	2006CA-Bmu-23039	121	8.8090
63	2007CA-Bmu-10836	433	8.7420
64	2007CA-Bmu-00835	28	8.7410
65	2002MX-Bmu-00840	368	8.1890
66	2005CA-Bmu-10830	19	8.1690
67	2005CA-Bmu-10823	25	7.8740
68	2004CA-Bmu-10834	222	7.1830
69	2005CA-Bmu-00845	42	7.0210
70	1994CA-Bmu-10828	80	6.8390
71	1999CA-Bmu-00837	30	6.6560
72	2008CA-Bmu-00840	173	6.3810
73	2004CA-Bmu-01389	117	6.0760
74	1999CA-Bmu-10821	23	6.0140
75	2005CA-Bmu-01389	118	5.8640
76	2007CA-Bmu-00847	35	5.6480
77	2004CA-Bmu-10831	107	5.2360
78	1995CA-Bmu-04172	23	5.0840
79	2005CA-Bmu-00849	46	4.9500
80	2008CA-Bmu-05644	53	4.8800

	ID	GroupCount	range_latitude
81	1999CA-Bmu-02082	73	4.6420
82	2008CA-Bmu-10839	125	4.5890
83	1998CA-Bmu-00826	105	4.4600
84	2005CA-Bmu-01388	69	4.3620
85	2005CA-Bmu-10826	72	4.2600
86	2004CA-Bmu-00849	156	4.1920
87	2004CA-Bmu-23030	24	4.0290
88	1999CA-Bmu-23038	143	3.6070
89	2008CA-Bmu-05878	29	3.4070
90	2005CA-Bmu-10833	53	3.4020
91	1999CA-Bmu-00830	54	3.1540
92	1998CA-Bmu-00833	58	3.0330
93	2007CA-Bmu-04172	49	2.9400
94	2000CA-Bmu-10825	23	2.6320
95	2007CA-Bmu-00836	72	2.4380
96	1995CA-Bmu-00845	8	2.4040
97	2004CA-Bmu-10825	20	2.2790
98	2005CA-Bmu-02082	24	2.2700
99	1995CA-Bmu-23041	51	2.1760
100	1995CA-Bmu-00837	37	1.7890
		:	

Select a whale from the dataset

```
whaleIDs = string(whalesSummary.ID);
id = whaleIDs(96)
```

```
id =
"1995CA-Bmu-00845"
```

```
rowsToKeep = whales.ID==id;
whale = whales(rowsToKeep,:)
```

```
whale = 8x8 table
```

	ID	timestamp	longitude	latitude	sensorQuality
1	1995CA-Bmu-00845	1995-09-11 01:49:31.000	-120.0790	34.1420	A
2	1995CA-Bmu-00845	1995-09-11 03:28:34.000	-120.2740	34.4190	0
3	1995CA-Bmu-00845	1995-09-11 11:10:21.000	-119.6650	34.2080	B
4	1995CA-Bmu-00845	1995-09-11 14:07:01.000	-120.2720	34.2570	B
5	1995CA-Bmu-00845	1995-09-12 03:09:23.000	-121.2550	33.5350	B
6	1995CA-Bmu-00845	1995-09-12 20:40:45.000	-121.2850	33.0260	B
7	1995CA-Bmu-00845	1995-09-13 01:02:57.000	-120.6380	32.5060	B
8	1995CA-Bmu-00845	1995-09-13 02:43:34.000	-122.8820	32.0150	B

Visualize the path on a map

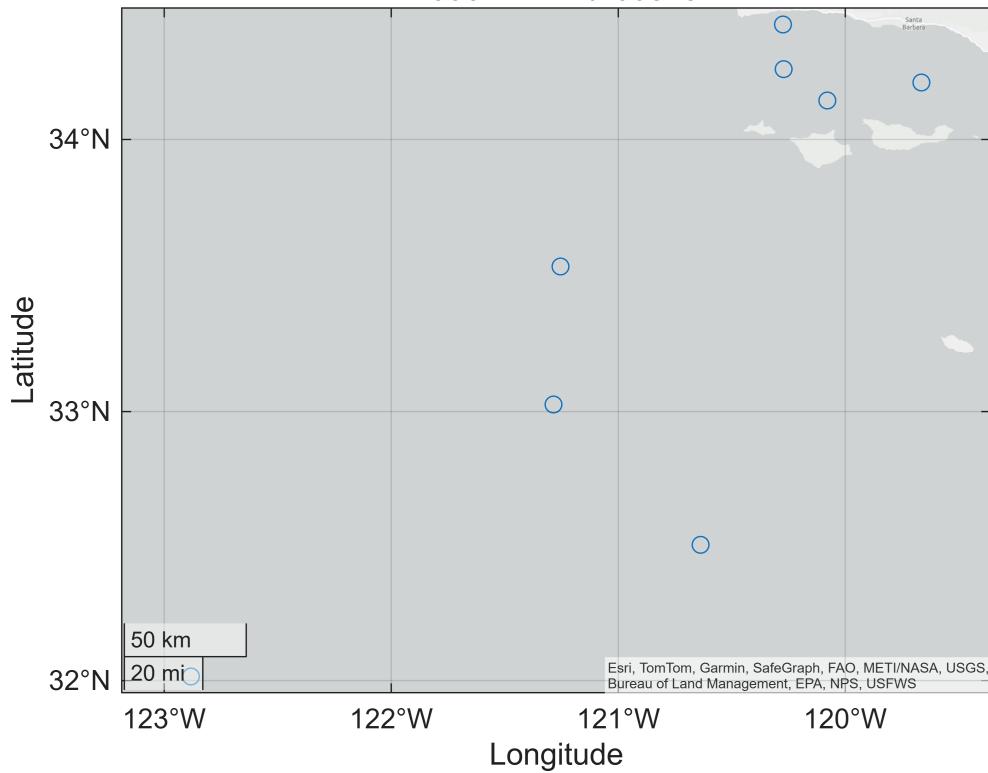
```
numPoints = height(whale)
```

```
numPoints =
8
```

```
if numPoints < 10
    geoplot(whale.latitude,whale.longitude, "o")
elseif numPoints < 100
    geoplot(whale.latitude,whale.longitude, "o-")
else
    geoplot(whale.latitude,whale.longitude, "-")
end
```

```
title(id)
```

1995CA-Bmu-00845



```
histogram(whalesSummary.GroupCount, 25);  
xlabel("Number of data points");  
ylabel("Number of whales");
```

