Seminoff EPac green turtle Stable Isotope Data Analysis

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Metadata

Site - an ordinal code for each site
Site code - 3 letter code for each site
Ordered_SITE - combined site code with ordered # roughly North to South for graphing ordering **Location_Label** - shortened locatin names for graphing labeling purposes **Location** - location of turtle capture
LAB ID - self explanatory
Collection Date - self explanatory
Run Date - self explanatory
%N - elemental concentration of N. that is, how much each sample is made up of nitrogen. this is used as a diagnostic to know sample quality (anything outside of ~9-17% N raises a red flag)
%C - elemental concentration of C. that is, how much each sample is made up of carbon. this is used as a diagnostic to know sample quality (anything outside of ~40-60% C raises a red flag)
d15N - stable isotope value for N
d13C - stable isotope value for C
Color - rarely filled in. This is largely for the Galapagos and Colombia, where black turtles (eastern Pacific stock) and yellow turtles (west Pacific origins) co-exist. Safe to say that anything that is not filled in here would be a 'black' morph.
SCL - straight carapace length
CCL_calc_fromSCL - used formula from Seminoff et al. 2003 to interpolate CCLs from SCLs **CCL_empirical** - curved carapace length-these are only the empirically collected values
CCL_combined - curved carapace length-I pasted over all the empirical values, and then for ones that were missing empirical CCL but had **CCL_calc_fromSCL**, I added these in; so this is the combined variable that we'll use for size relationships

```
Summary (Sample Sizes)

##
## 1-SGR_SBN     3-SDB     4-ESC     5-LSI     6-BMA     9-BLA    11-CIN
##        25        88        10         9        26        53        28
##    13-DUL    14-PAR    15-MEJ    17-COC    18-GOR    19-IGP    20-IGE
##        74        21        21        67        76        41        37
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##     21-IGD     24-PPE
##         37         74
```
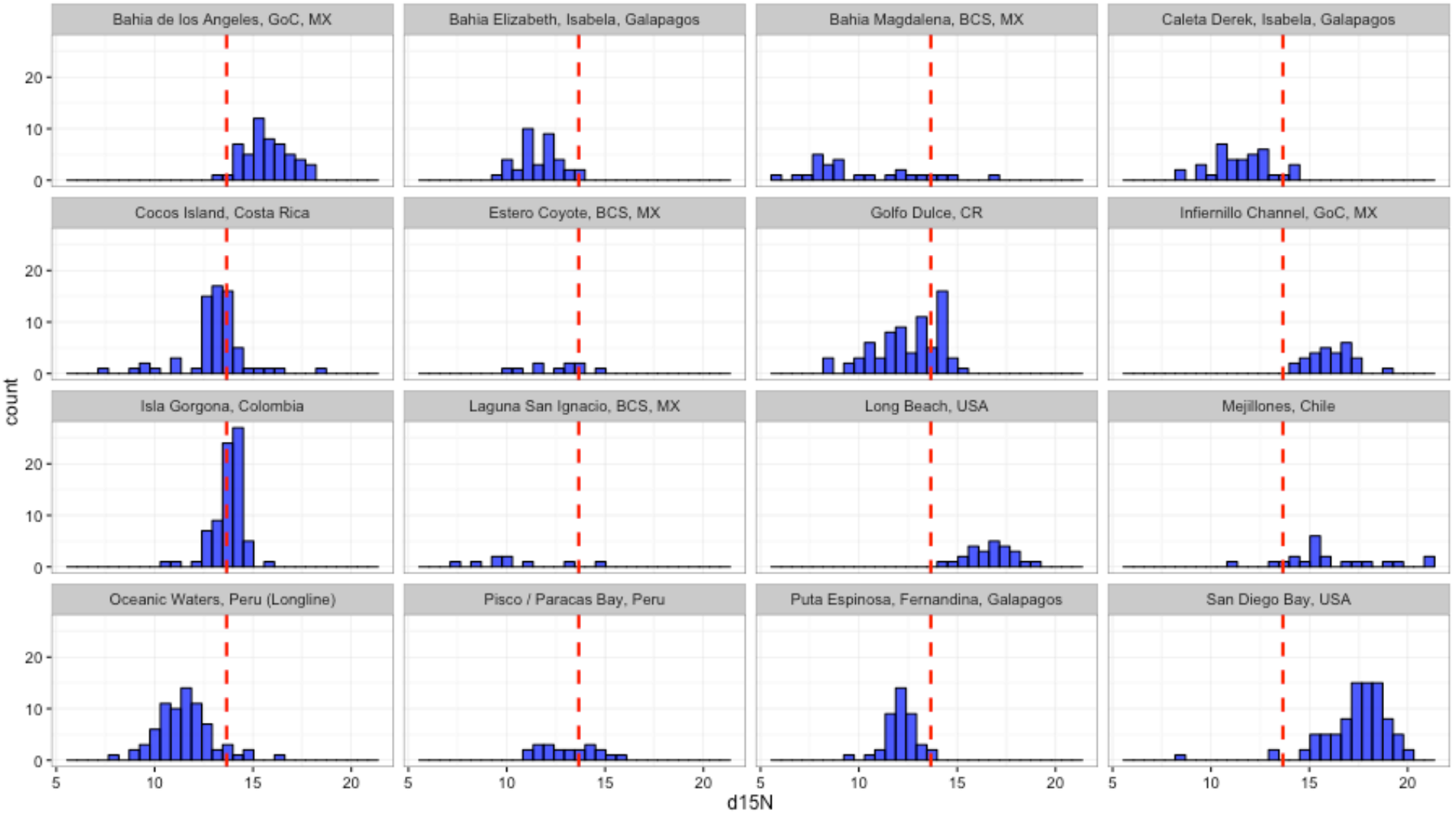
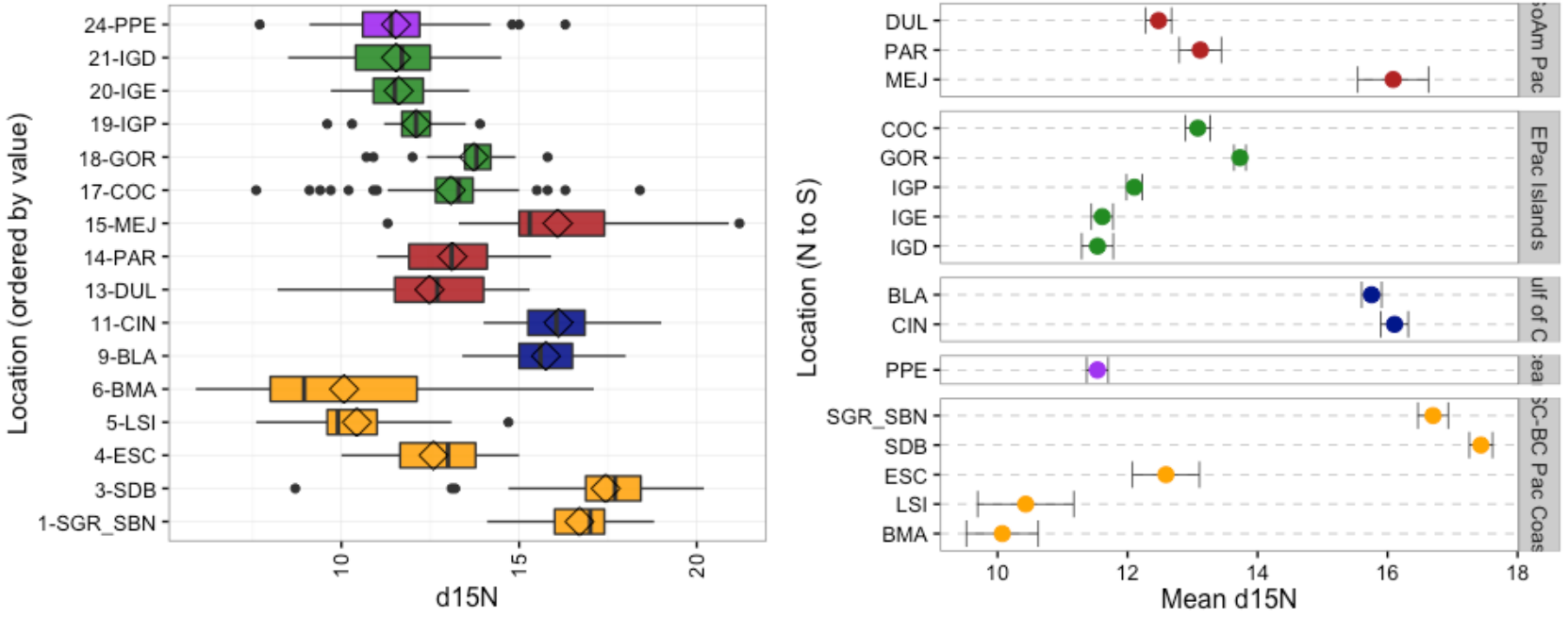
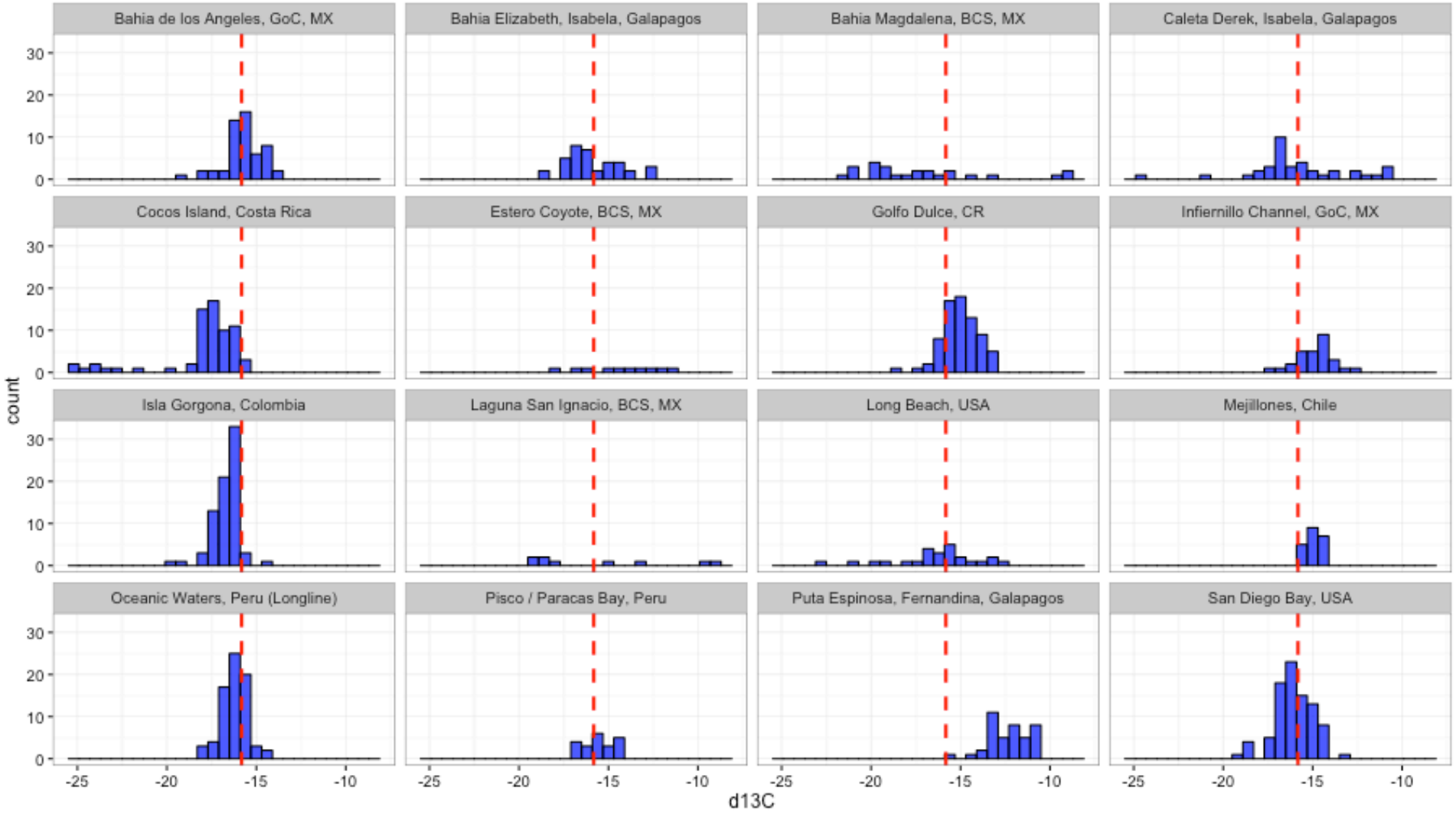
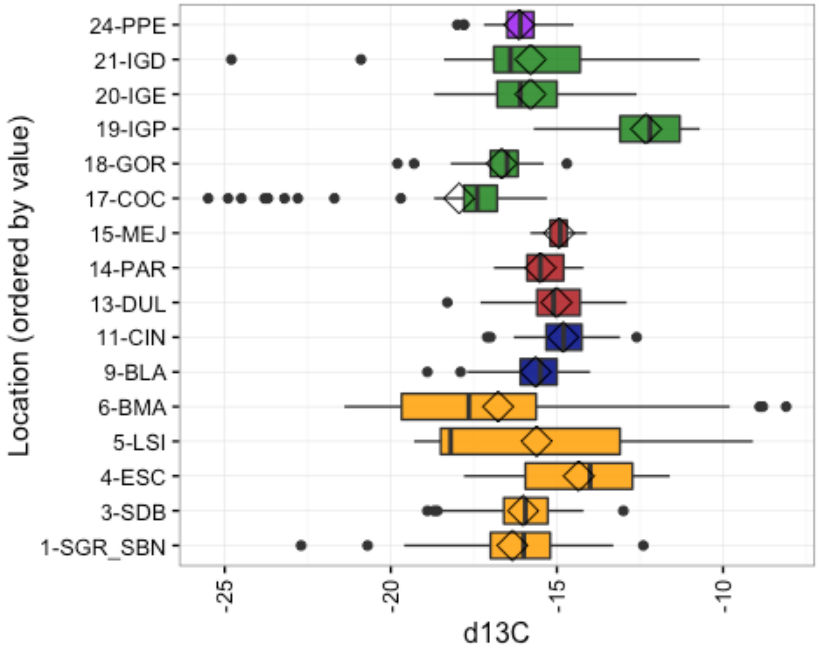

Laguna San Ignacio now only one with lower sample #s-confirm with Jeff keeping/seperate with Estero Coyote

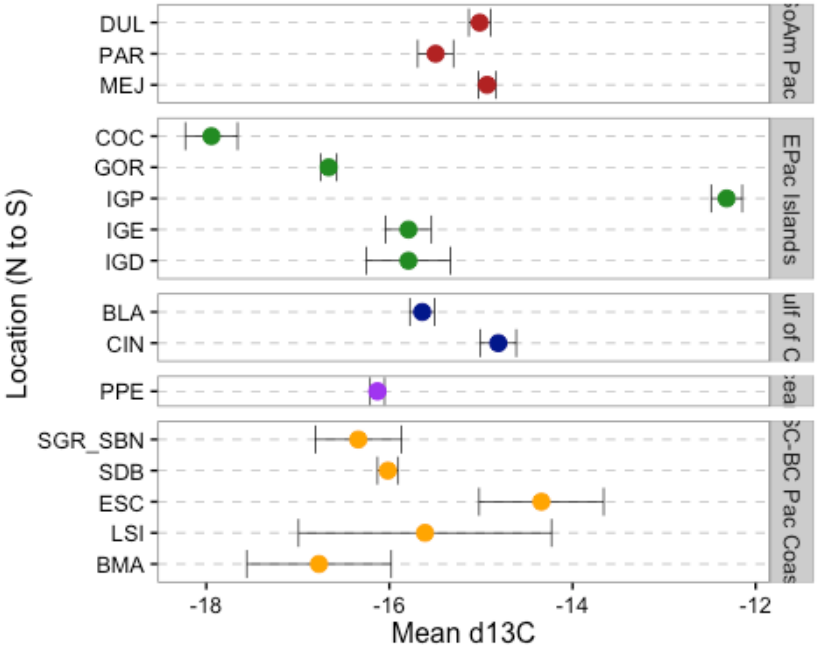



Location (ordered by value)
24-PPE
21-IGD
20-IGE
19-IGP
18-GOR
17-COC
15-MEJ
14-PAR
13-DUL
11-CIN
9-BLA
6-BMA
5-LSI
4-ESC
3-SDB
1-SGR_SBN
10
15
20
d15N
Location (N to S)
DUL
PAR
MEJ
COC
GOR
IGP
IGE
IGD
BLA
CIN
PPE
SGR_SBN
SDB
ESC
LSI
BMA
EPac Islands
10
12
14
16
18
Mean d15N

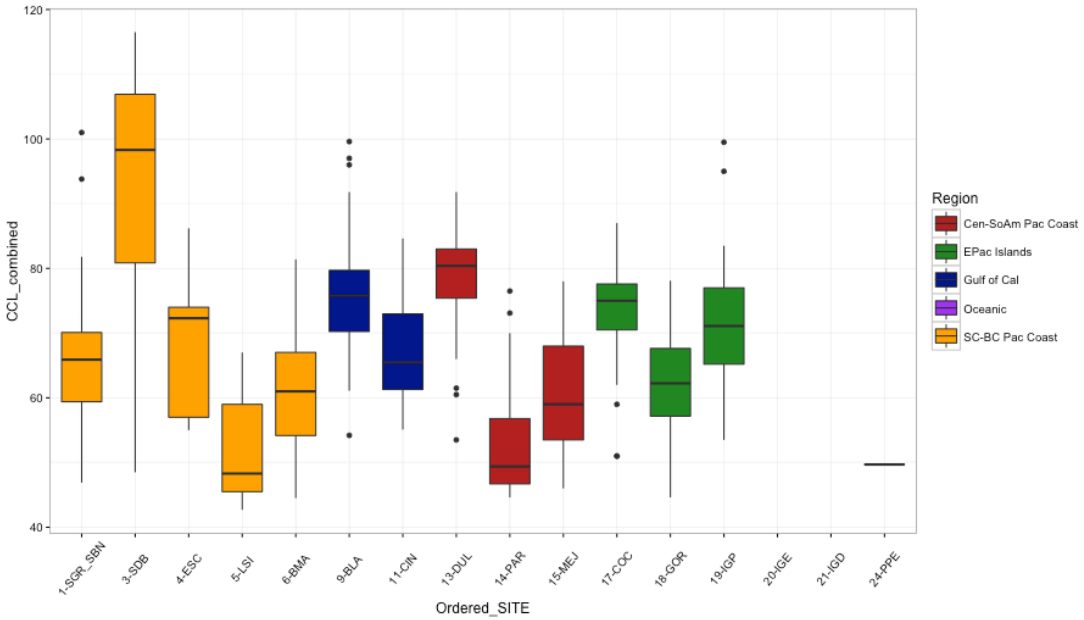
Carbon

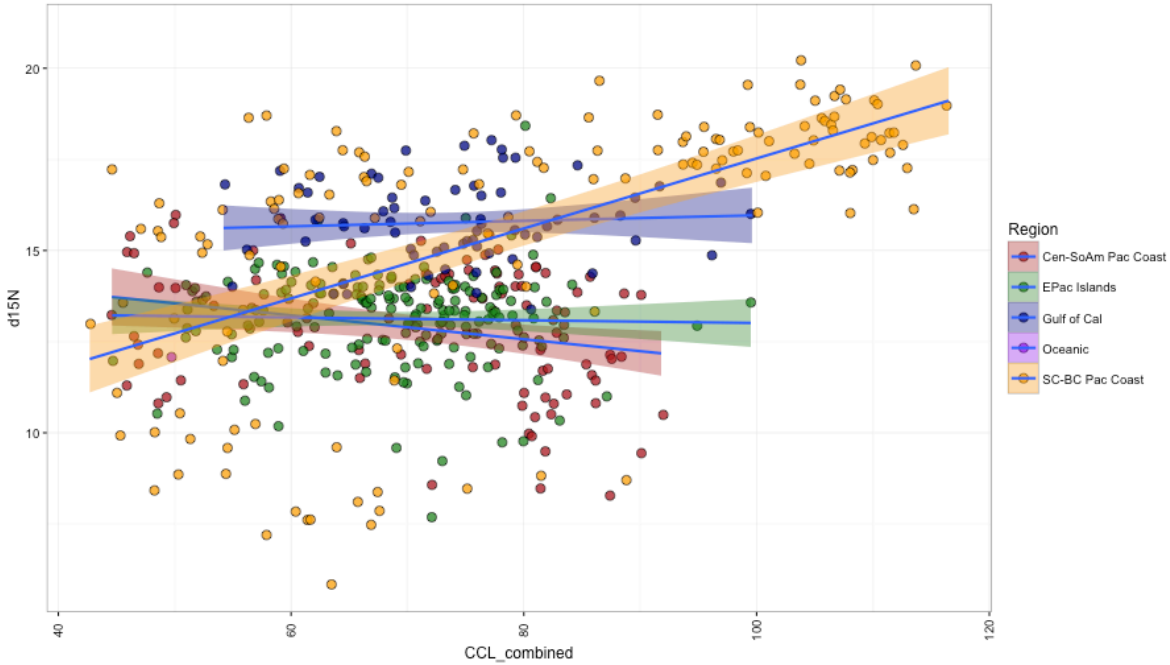

Bahia de los Angeles, GoC, MX
Bahia Elizabeth, Isabela, Galapagos
Bahia Magdalena, BCS, MX
Caleta Derek, Isabela, Galapagos
Cocos Island, Costa Rica
Estero Coyote, BCS, MX
Golfo Dulce, CR
Infiernillo Channel, GoC, MX
Isla Gorgona, Colombia
Laguna San Ignacio, BCS, MX
Long Beach, USA
Mejillones, Chile
Oceanic Waters, Peru (Longline)
Pisco / Paracas Bay, Peru
Puta Espinosa, Fernandina, Galapagos
San Diego Bay, USA
count
0
10
20
30
-25
-20
-15
-10
d13C

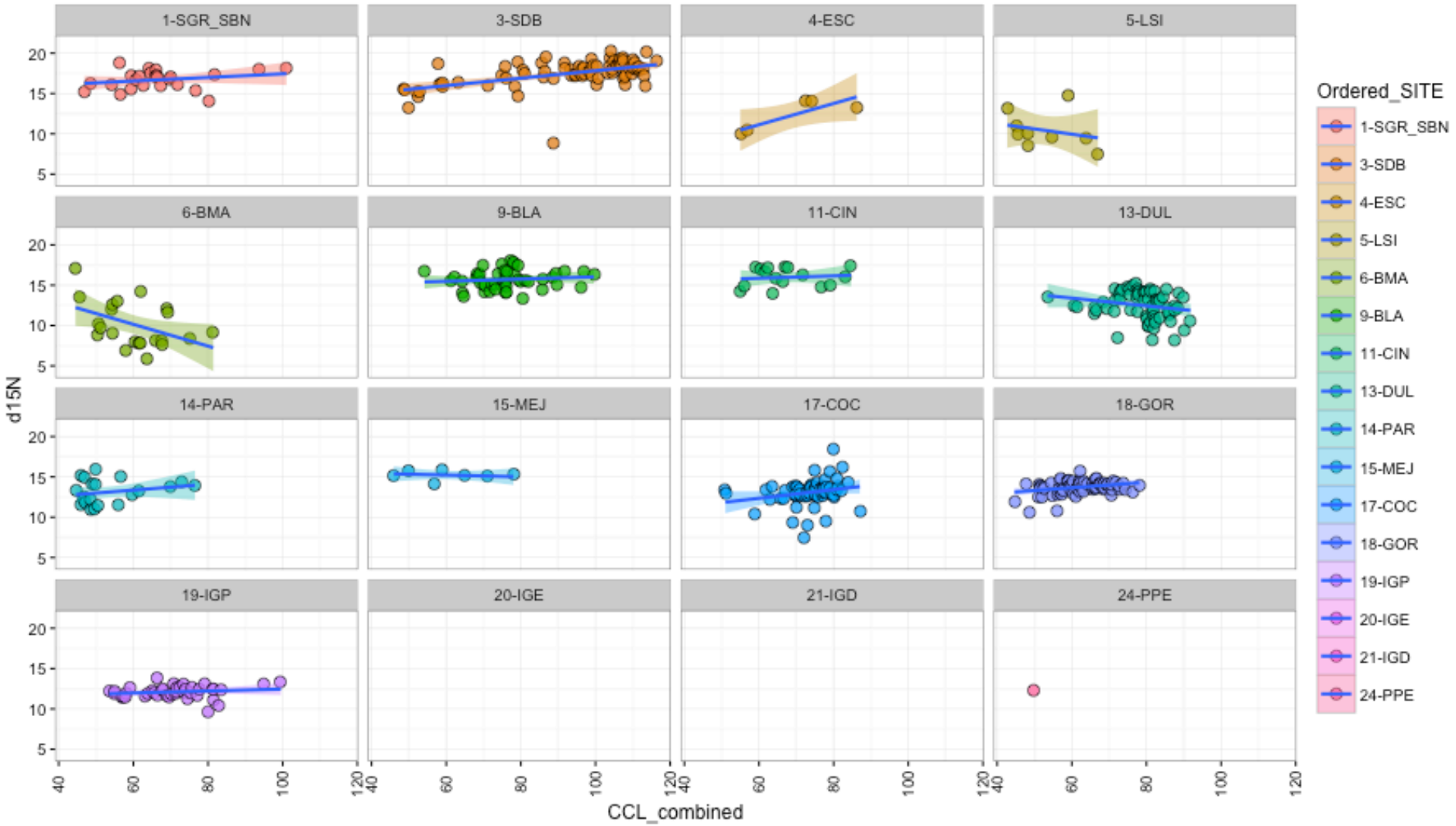

Location (ordered by value)
24-PPE
21-IGD
20-IGE
19-IGP
18-GOR
17-COC
15-MEJ
14-PAR
13-DUL
11-CIN
9-BLA
6-BMA
5-LSI
4-ESC
3-SDB
1-SGR_SBN
-25
-20
-15
-10
d13C

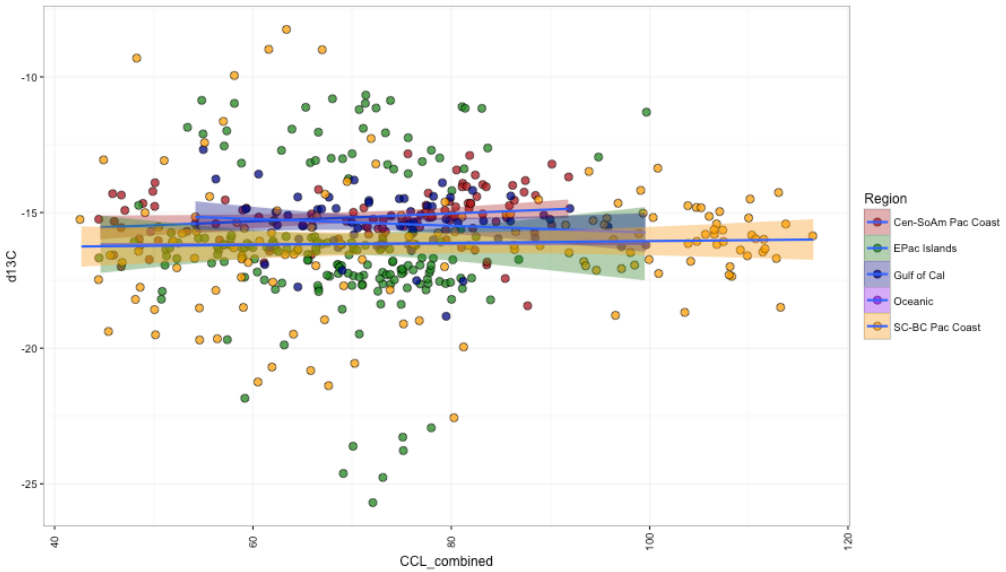

Location (N to S)
DUL
PAR
MEJ
COC
GOR
IGP
IGE
IGD
BLA
CIN
PPE
SGR_SBN
SDB
ESC
LSI
BMA
EPac Islands
-18
-16
-14
-12
Mean d13C

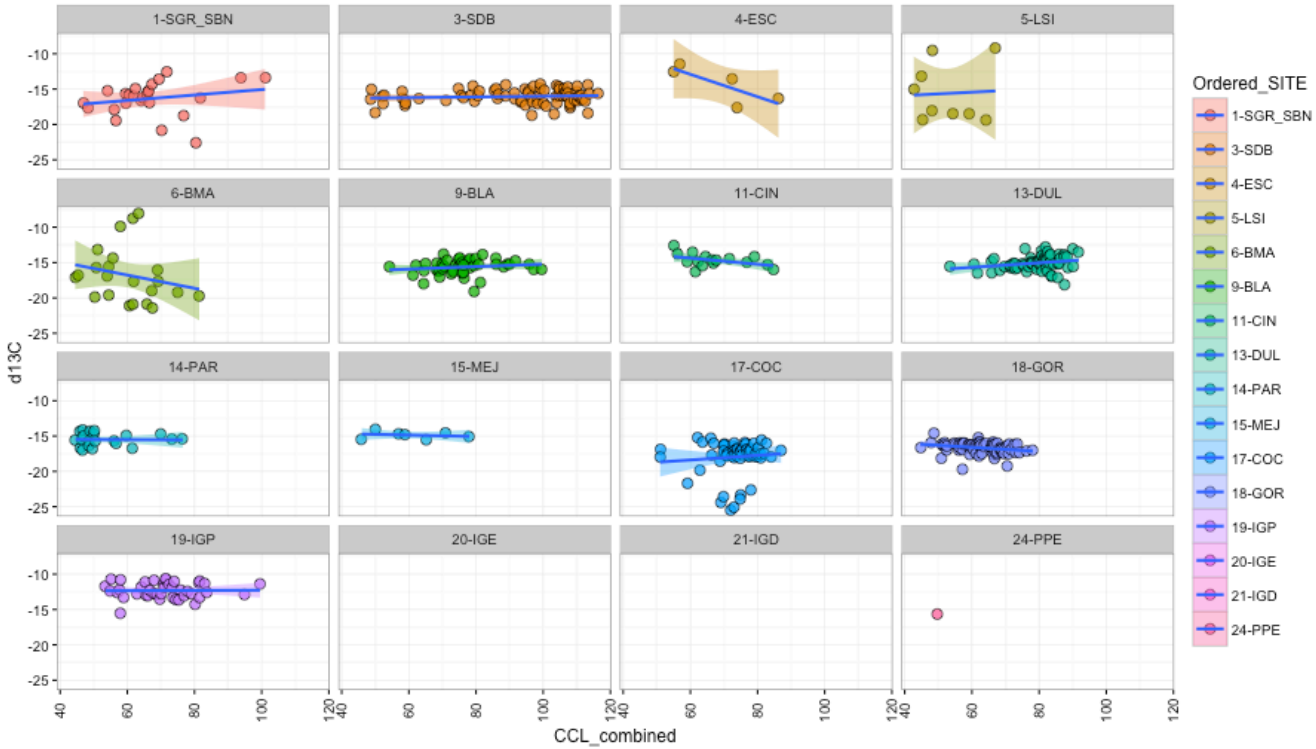
Turtle Size or Color



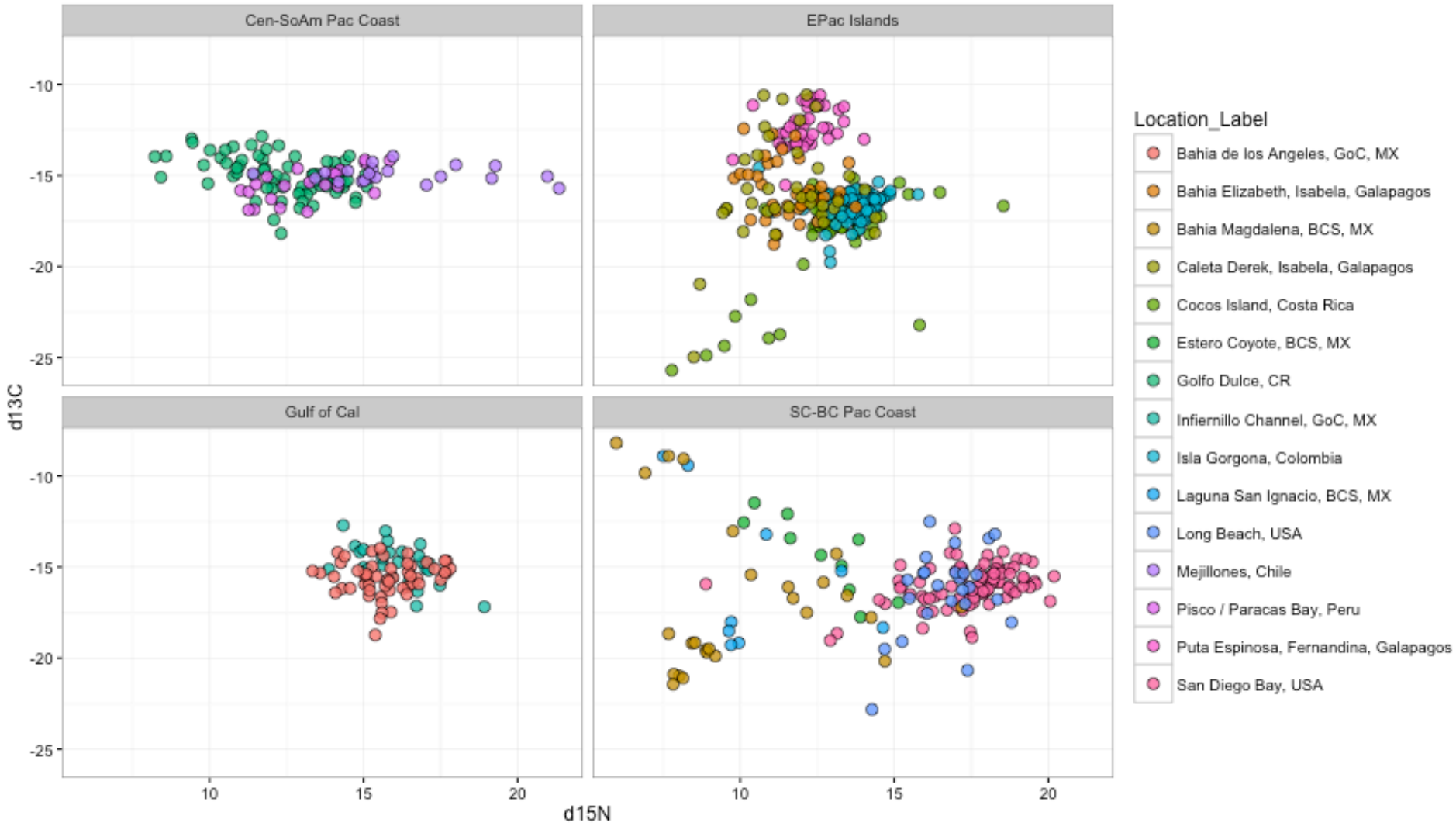


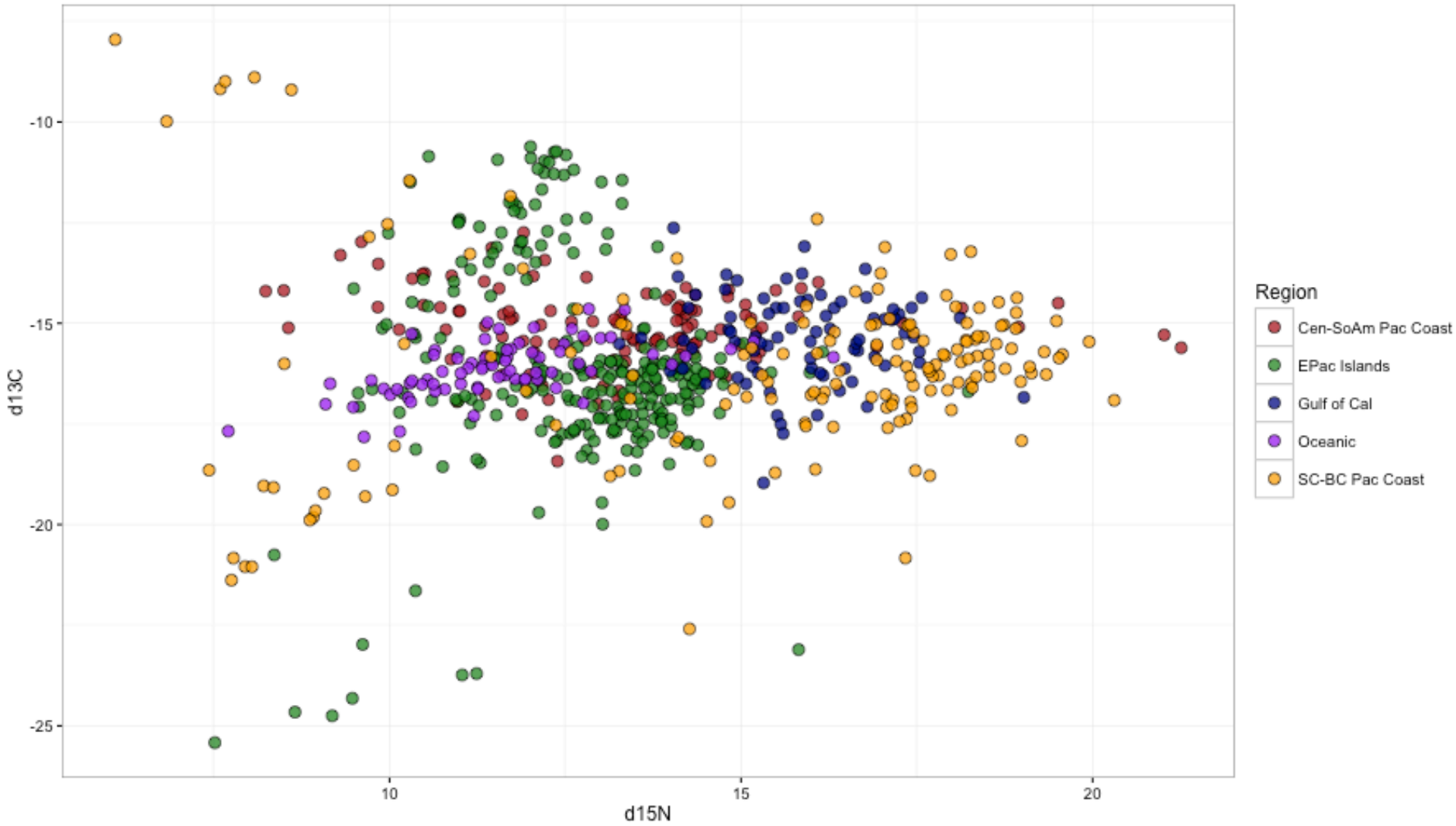

1-SGR_SBN
3-SDB
4-ESC
5-LSI
6-BMA
9-BLA
11-CIN
13-DUL
14-PAR
15-MEJ
17-COC
18-GOR
19-IGP
20-IGE
21-IGD
24-PPE
d15N
CCL_combined
Ordered_SITE

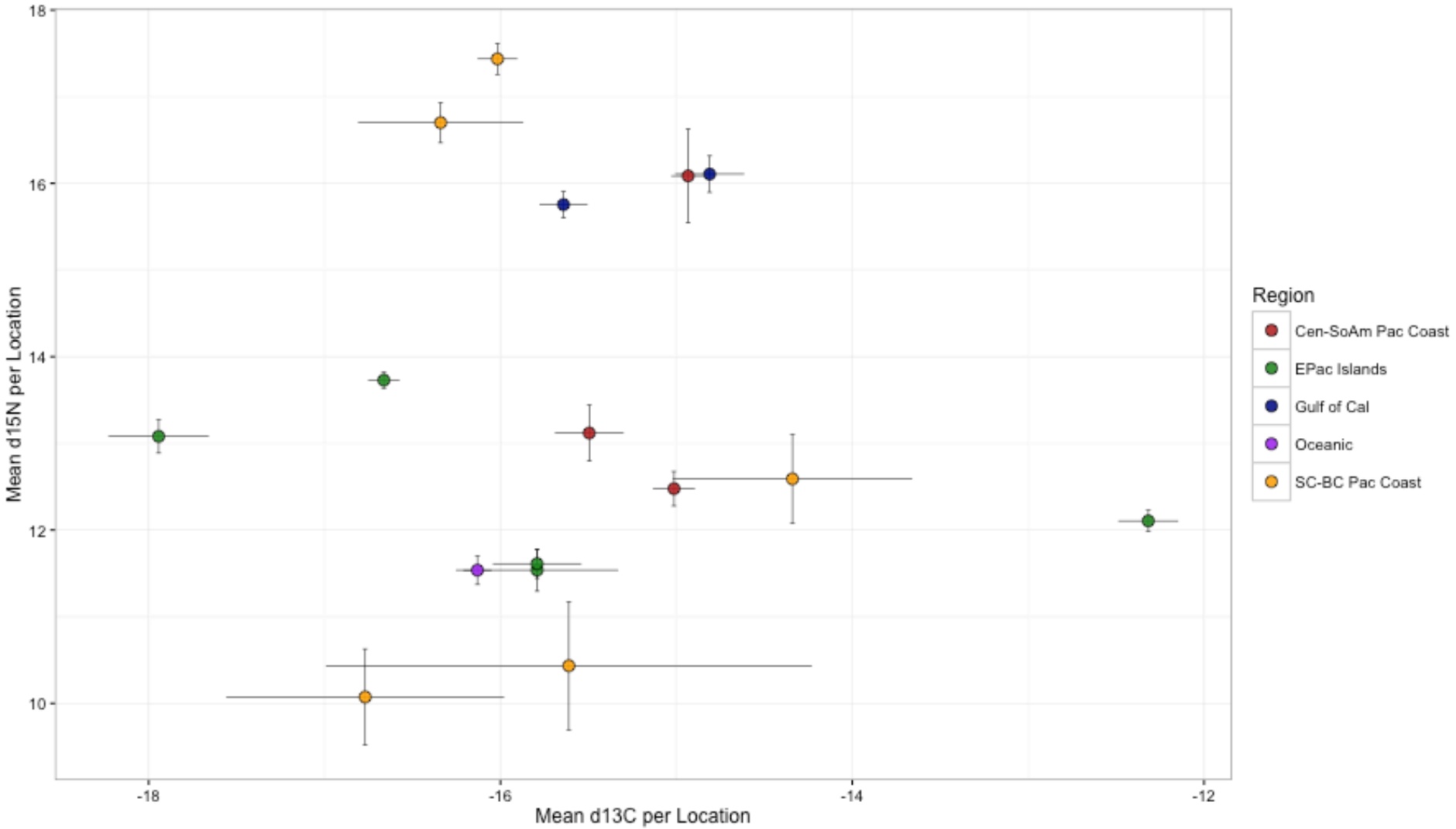

d13C
CCL_combined
Region
Cen-SoAm Pac Coast
EPac Islands
Gulf of Cal
Oceanic
SC-BC Pac Coast

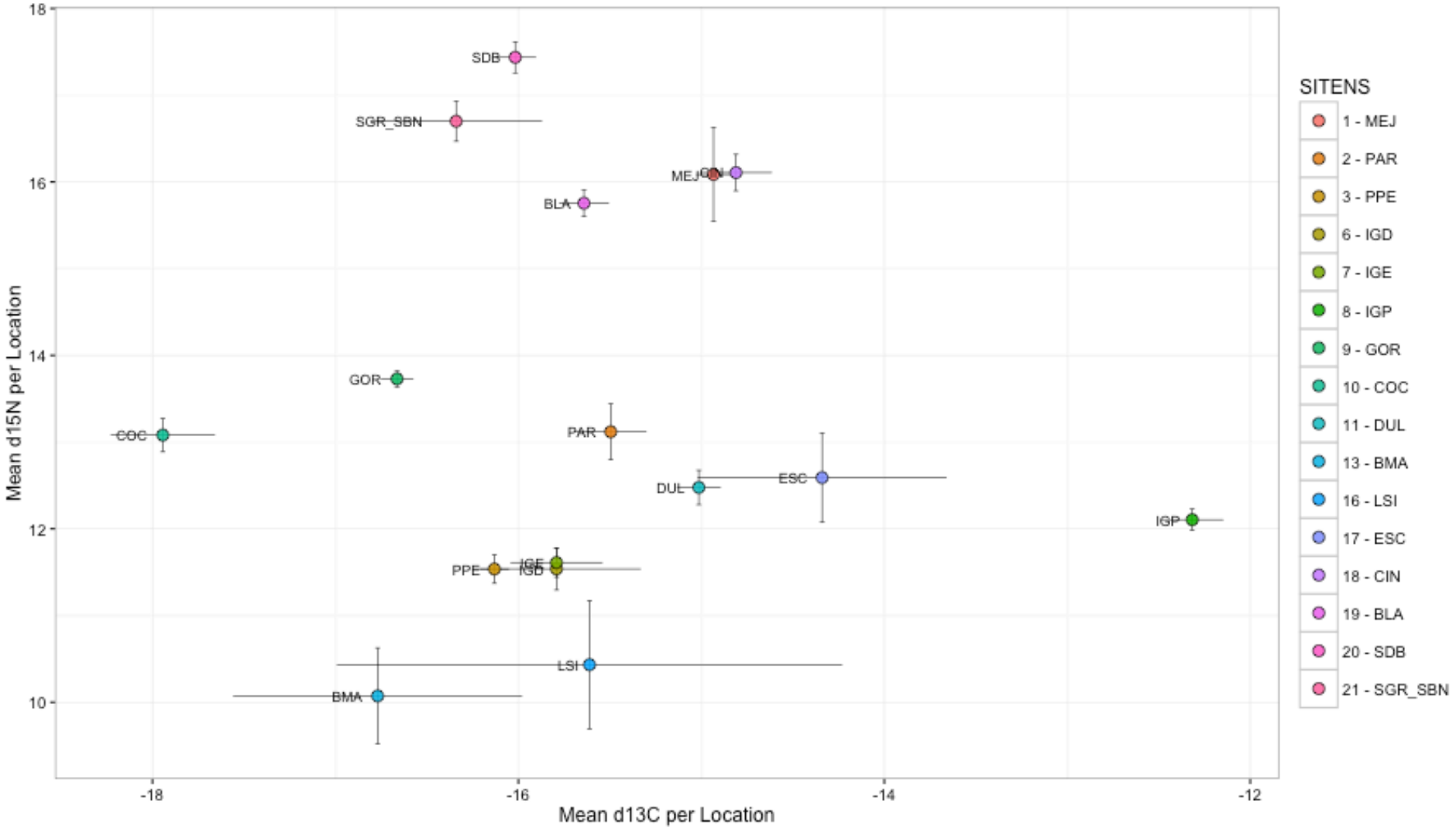

1-SGR_SBN
3-SDB
4-ESC
5-LSI
6-BMA
9-BLA
11-CIN
13-DUL
14-PAR
15-MEJ
17-COC
18-GOR
19-IGP
20-IGE
21-IGD
24-PPE
d13C
CCL_combined
Ordered_SITE

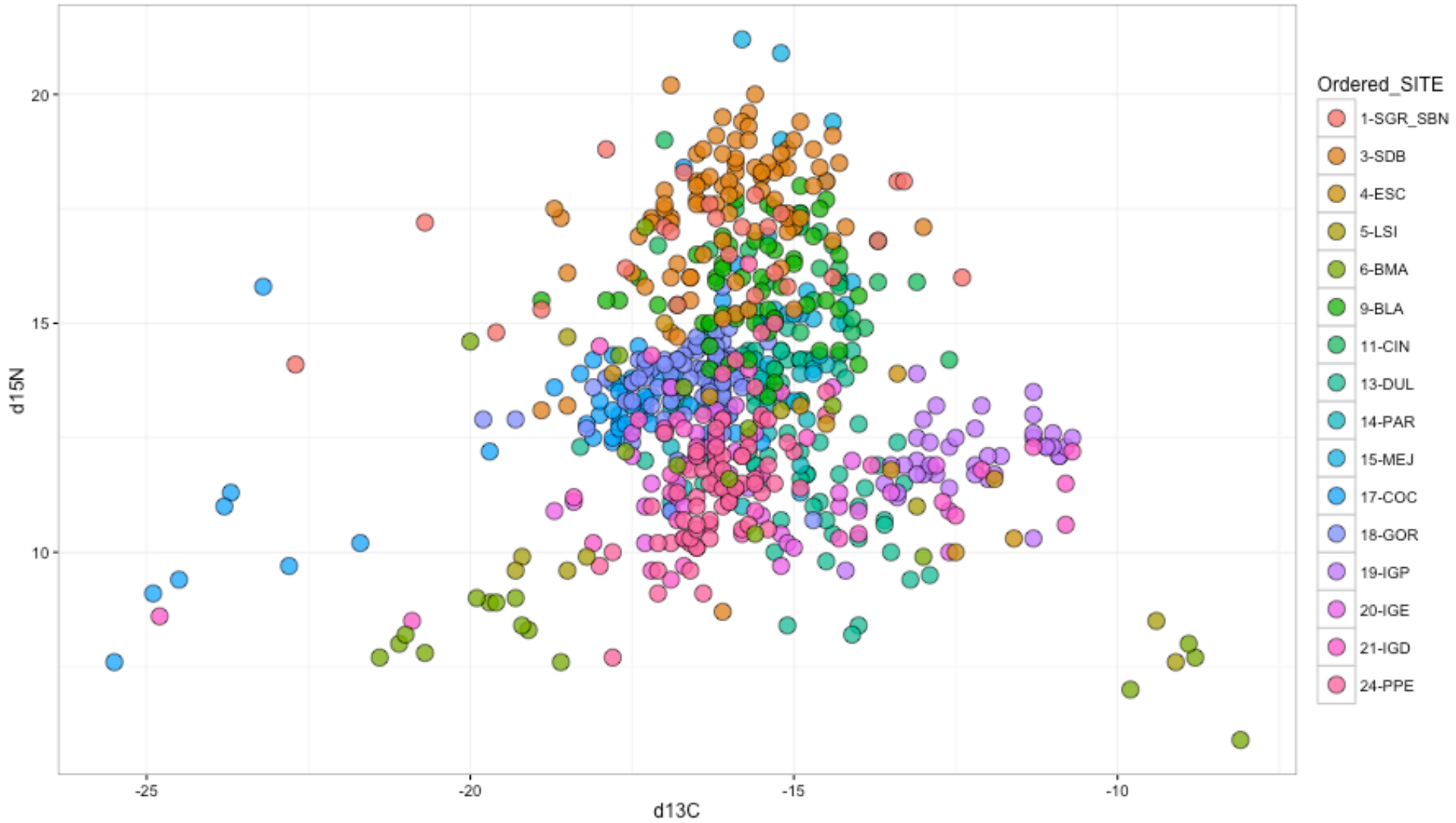
```
m1<-lm(data=data, d15N~CCL_combined*Ordered_SITE)
## CCL_combined:Ordered_SITE6-BMA   -0.156964   0.039628  -3.961 8.64e-05 ***
## CCL_combined:Ordered_SITE13-DUL  -0.070234   0.032281  -2.176  0.03008 *

## Anova Table (Type II tests)
## Response: d15N
##                             Sum Sq  Df F value    Pr(>F)
## CCL_combined                 38.70   1 19.9084 1.021e-05 ***
## Ordered_SITE               1647.81  13 65.2055 < 2.2e-16 ***
## CCL_combined:Ordered_SITE    97.68  12  4.1874 2.868e-06 ***
## Residuals                   900.04 463

#remember to come back and remove point to see if makes difference in weight of sign. at BMA
```

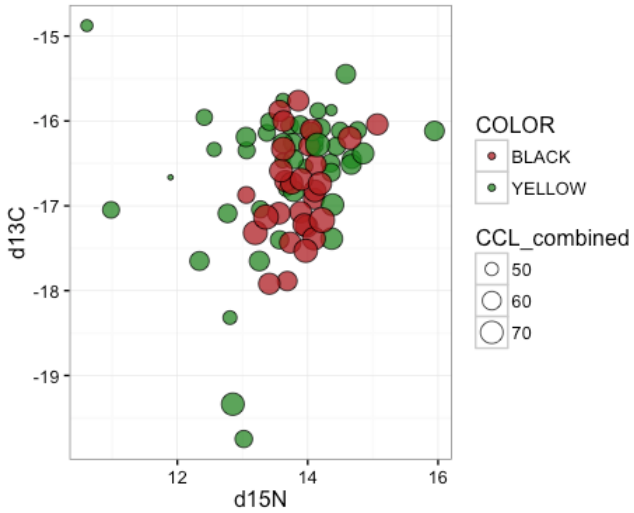

Cen-SoAm Pac Coast
EPac Islands
Gulf of Cal
SC-BC Pac Coast
d13C
d15N
-10
-15
-20
-25
10
15
20
Location_Label
Bahia de los Angeles, GoC, MX
Bahia Elizabeth, Isabela, Galapagos
Bahia Magdalena, BCS, MX
Caleta Derek, Isabela, Galapagos
Cocos Island, Costa Rica
Estero Coyote, BCS, MX
Golfo Dulce, CR
Infiernillo Channel, GoC, MX
Isla Gorgona, Colombia
Laguna San Ignacio, BCS, MX
Long Beach, USA
Mejillones, Chile
Pisco / Paracas Bay, Peru
Puta Espinosa, Fernandina, Galapagos
San Diego Bay, USA

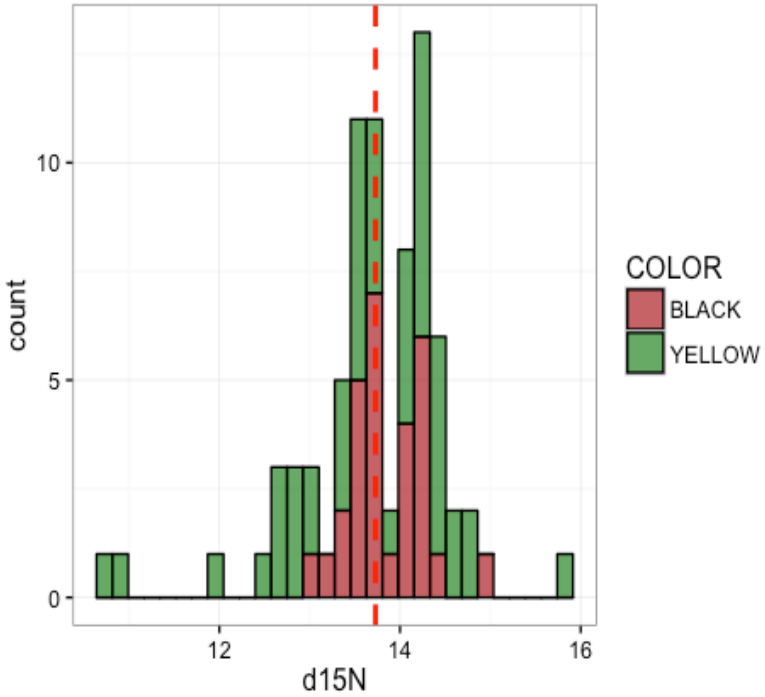

-10
-15
-20
-25
d13C
10
15
20
d15N
Region
Cen-SoAm Pac Coast
EPac Islands
Gulf of Cal
Oceanic
SC-BC Pac Coast

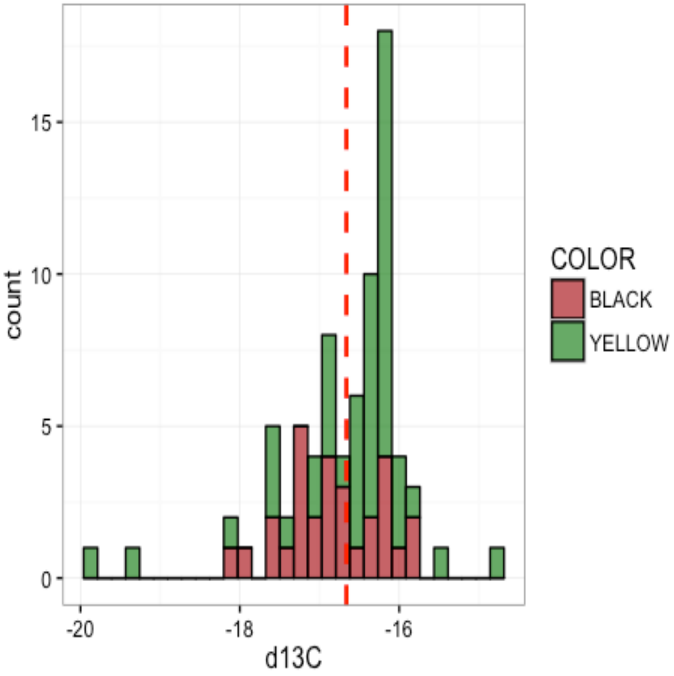

Mean d15N per Location
18
16
14
12
10
-18
-16
-14
-12
Mean d13C per Location
Region
Cen-SoAm Pac Coast
EPac Islands
Gulf of Cal
Oceanic
SC-BC Pac Coast

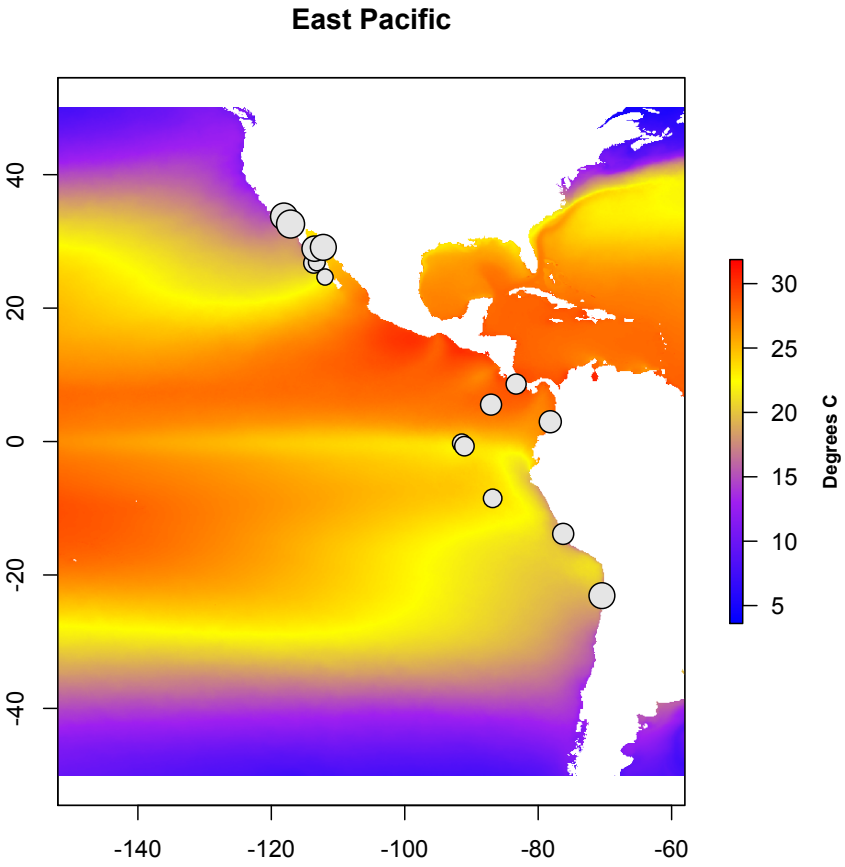

Mean d15N per Location
Mean d13C per Location
18
16
14
12
10
-18
-16
-14
-12
SDB
SGR_SBN
MEJ
BLA
GOR
COC
PAR
DUL
ESC
IGP
PPE
IGE
IGD
LSI
BMA
SITENS
1 - MEJ
2 - PAR
3 - PPE
6 - IGD
7 - IGE
8 - IGP
9 - GOR
10 - COC
11 - DUL
13 - BMA
16 - LSI
17 - ESC
18 - CIN
19 - BLA
20 - SDB
21 - SGR_SBN

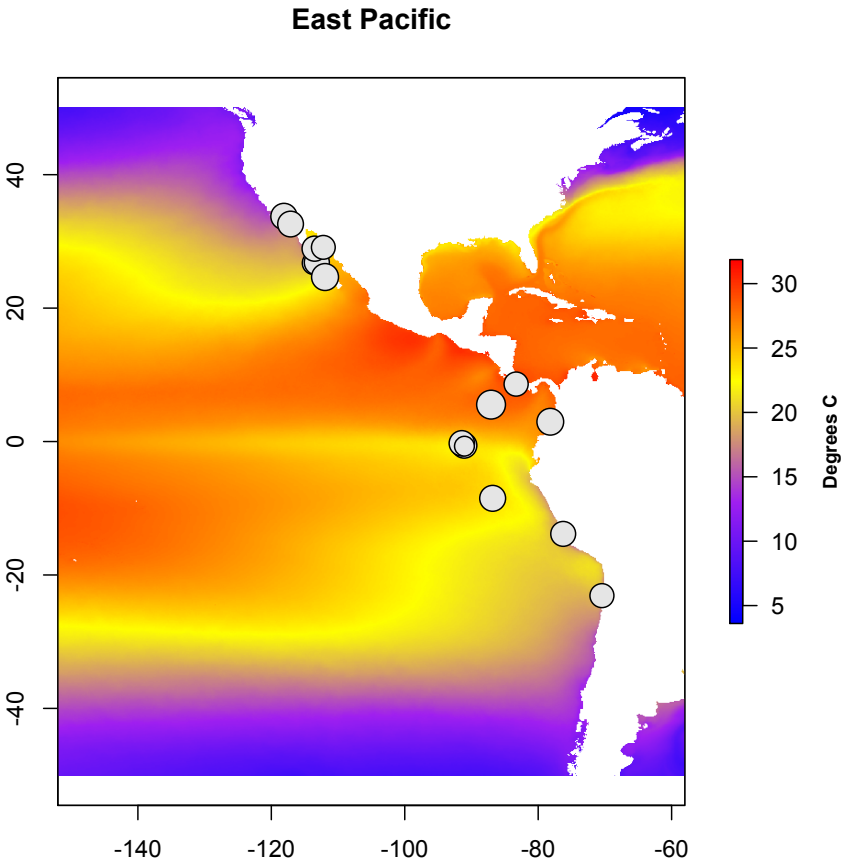

d15N
20
15
10
-25
-20
-15
-10
d13C
Ordered_SITE
1-SGR_SBN
3-SDB
4-ESC
5-LSI
6-BMA
9-BLA
11-CIN
13-DUL
14-PAR
15-MEJ
17-COC
18-GOR
19-IGP
20-IGE
21-IGD
24-PPE


-15
-16
-17
-18
-19
d13C
12
14
16
d15N
COLOR
BLACK
YELLOW
CCL_combined
50
60
70


10
5
0
count
12
14
16
d15N
COLOR
BLACK
YELLOW


15
10
5
0
count
-20
-18
-16
d13C
COLOR
BLACK
YELLOW


East Pacific
40
20
0
-20
-40
-140
-120
-100
-80
-60
30
25
20
15
10
5
Degrees C


East Pacific
40
20
0
-20
-40
-140
-120
-100
-80
-60
30
25
20
15
10
5
Degrees C