Verify Coefficient Creation

Started June 3, 2019

Steps in running model

- get weather data from source
    - cron running on arcus.sws.uiuc.edu
    - data 2 days behind current date
    - verified 03 Jun 2019
- daily weather
    - convert to cm and celsius
    - average min and max temps
    - put into year-month-week dictionary
    - (verified 03 Jun 2019)
- `calculate_seasonal_weather`
    - problem with seasons 03 Jun 2019
        - change made large difference in winter seasonal values (below)
    - values:
        - temp avg summed and divided by 13
        - precip avg is summed (not divided by 13) (changed 14 Jun 2019 to divided by 13)
- calculate_weekly_30yr_normals
    - looks ok
- calculate_seasonal_30yr_normals
    - mistake divided season average by 13 not 30

calculate_seasonal_weather	Notes	output winter 2016	Coefficients

	- For winter, previous calendar year should be for weeks 49-52 (3) not 1-9 - for first year of data, all seasons within if count_years > 1 block	**before**
		
		`2016: {'fall': {'degree_week_average_c': 16.087301587301575,`
		
		`'precip_week_average_cm': 21.488400000000002},`
		`        'spring': {'degree_week_average_c': 0,`
		
		`'precip_week_average_cm': 28.5242},`
		`        'summer': {'degree_week_average_c': 6.838827838827833,`
		
		`'precip_week_average_cm': 40.9194},`
		`        'winter': {'degree_week_average_c': 4.9499389499389475,`
		
		`'precip_week_average_cm': 11.556999999999999}},`
			before
			
			`  "2": {`
			
			`"dw2preci4": "-0.0005795453",`
			
			`"lastsummertemp": "0",`
			
			`"wintertemp": "0.1617251",`
			
			`"dw2preci3": "-0.1668376",`
			
			`"dw2preci2": "0.003797379",`
			
			`"dw2preci1": "-0.3367884",`
			
			`"dw3preci1": "0.293194",`
			
			`"dw1preci4": "-0.02145926",`

before

```
        for epi_week in weekly_weather[epi_year]:

            if count_years > 1:
                if 1 <= epi_week <= 9:
                    seasonal_weather[epi_year]
["winter"]["degree_week_average_c"] +=
weekly_weather[epi_year-1][epi_week]
["degree_week_c"]
                    seasonal_weather[epi_year]
["winter"]["precip_week_average_cm"] +=
weekly_weather[epi_year-1][epi_week]["precip_cm"]
                if 49 <= epi_week <= 52:
                    seasonal_weather[epi_year]
["winter"]["degree_week_average_c"] +=
weekly_weather[epi_year][epi_week]
["degree_week_c"]
                    seasonal_weather[epi_year]
["winter"]["precip_week_average_cm"] +=
weekly_weather[epi_year][epi_week]["precip_cm"]
            if 23 <= epi_week <= 35:
                seasonal_weather[epi_year]
["summer"]["degree_week_average_c"] +=
weekly_weather[epi_year][epi_week]
["degree_week_c"]
                seasonal_weather[epi_year]
["summer"]["precip_week_average_cm"] +=
weekly_weather[epi_year][epi_week]["precip_cm"]
            if 10 <= epi_week <= 22:
                seasonal_weather[epi_year]
["spring"]["degree_week_average_c"] +=
weekly_weather[epi_year][epi_week]
["degree_week_c"]
                seasonal_weather[epi_year]
["spring"]["precip_week_average_cm"] +=
weekly_weather[epi_year][epi_week]["precip_cm"]
            if 36 <= epi_week <= 48:
                seasonal_weather[epi_year]["fall"]
["degree_week_average_c"] += weekly_weather
[epi_year][epi_week]["degree_week_c"]
                seasonal_weather[epi_year]["fall"]
["precip_week_average_cm"] += weekly_weather
[epi_year][epi_week]["precip_cm"]
```

```
"precilag1
":
"-0.045655
07",

"dwlag1":
"0.6759879
",

"winterpre
ci": "0",

"dwlag3":
"-0.362320
5",

"springtem
p":
"-1.443487
",

"dw3preci3
":
"0.0817753
1",

"dw1preci2
":
"-0.062638
24",

"dw1preci3
":
"0.0292632
5"
    }
```

after

```
        for epi_week in weekly_weather
[epi_year]:
            if 1 <= epi_week <= 9:
                seasonal_weather[epi_year]
["winter"]["degree_week_average_c"] +=
weekly_weather[epi_year][epi_week]
["degree_week_c"]
                seasonal_weather[epi_year]
["winter"]["precip_week_average_cm"] +=
weekly_weather[epi_year][epi_week]["precip_cm"]
            if 49 <= epi_week <= 52:
                seasonal_weather[epi_year]
["winter"]["degree_week_average_c"] +=
weekly_weather[epi_year-1][epi_week]
["degree_week_c"]
                seasonal_weather[epi_year]
["winter"]["precip_week_average_cm"] +=
weekly_weather[epi_year-1][epi_week]["precip_cm"]
            if 23 <= epi_week <= 35:
                seasonal_weather[epi_year]
["summer"]["degree_week_average_c"] +=
weekly_weather[epi_year][epi_week]
["degree_week_c"]
                seasonal_weather[epi_year]
["summer"]["precip_week_average_cm"] +=
weekly_weather[epi_year][epi_week]["precip_cm"]
            if 10 <= epi_week <= 22:
                seasonal_weather[epi_year]
["spring"]["degree_week_average_c"] +=
weekly_weather[epi_year][epi_week]
["degree_week_c"]
                seasonal_weather[epi_year]
["spring"]["precip_week_average_cm"] +=
weekly_weather[epi_year][epi_week]["precip_cm"]
            if 36 <= epi_week <= 48:
                seasonal_weather[epi_year]
["fall"]["degree_week_average_c"] +=
weekly_weather[epi_year][epi_week]
["degree_week_c"]
                seasonal_weather[epi_year]
["fall"]["precip_week_average_cm"] +=
weekly_weather[epi_year][epi_week]["precip_cm"]
```

after

```
 2016: {'fall':
{'degree_week_average_
c':
16.087301587301575,

'precip_week_average_c
m':
21.488400000000002},
      'spring':
{'degree_week_average_
c': 0,

'precip_week_average_c
m': 28.5242},
      'summer':
{'degree_week_average_
c': 6.838827838827833,

'precip_week_average_c
m': 40.9194},
      'winter':
{'degree_week_average_
c':
2.1733821733821777,

'precip_week_average_c
m': 18.7706}},
```

after

```
{
"2": {
"dw2preci4":
"0.05358239",
"lastsummertemp"
: "0.8415992",
"wintertemp":
"-1.313953",
"dw2preci3":
"-0.1343593",
"dw2preci2":
"-0.05608847",
"dw2preci1":
"-0.3259052",
"dw3preci1":
"0.2693502",
"dw1preci4":
"-0.07662612",
"precilag1":
"-0.01489565",
"dwlag1":
"0.6213925",
"winterpreci":
"-0.07753674",
"dwlag3":
"-0.3471082",
"springtemp":
"1.298059",
"dw3preci3":
"0.06238141",
"dw1preci2":
"-0.01130325",
"dw1preci3":
"0.007980013"
}
}
```

Compare input parameters (diffs) for 2005 week 18 illinois climate div 2 18 Jun 2019

parameter	python	master	comments
precip	-1.83	-1.83	looks like all are the same
precip_lag_1	-1.54	-0.15	other lags with order of mag diff