xarray composite coord plot

March 10, 2016

In [9]:
```
%matplotlib inline
import xarray
import numpy as np
```

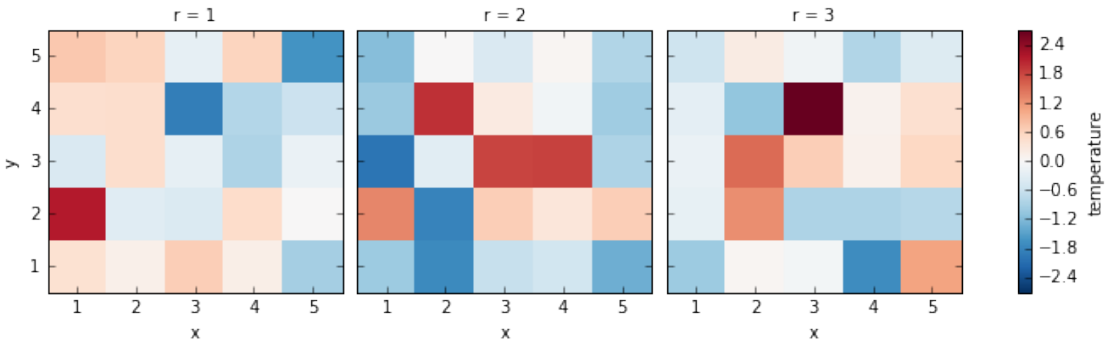
In [10]:
```
# create a random set of data
temp = np.random.randn(3, 5, 5,3)

dat = xarray.Dataset({
        'temperature': (['time', 'x', 'y', 'r'], temp)
        },
        coords={'x': [1,2,3,4,5],
                'y': [1,2,3,4,5],
                'time': [1,2,3],
                'r': [1,2,3]})
```

In [24]:
```
dat.coords
```

Out[24]:
```
Coordinates:
  * y        (y) int64 1 2 3 4 5
  * x        (x) int64 1 2 3 4 5
  * r        (r) int64 1 2 3
  * time     (time) int64 1 2 3
    rtime    (time, r) int64 1 0 0 2 1 0 3 1 1
```

In [14]:
```
dat.temperature.sel(time=1).plot(x='x', y='y', col='r')
```

Out[14]:
```
<xarray.plot.facetgrid.FacetGrid at 0x7f23440a6a10>
```

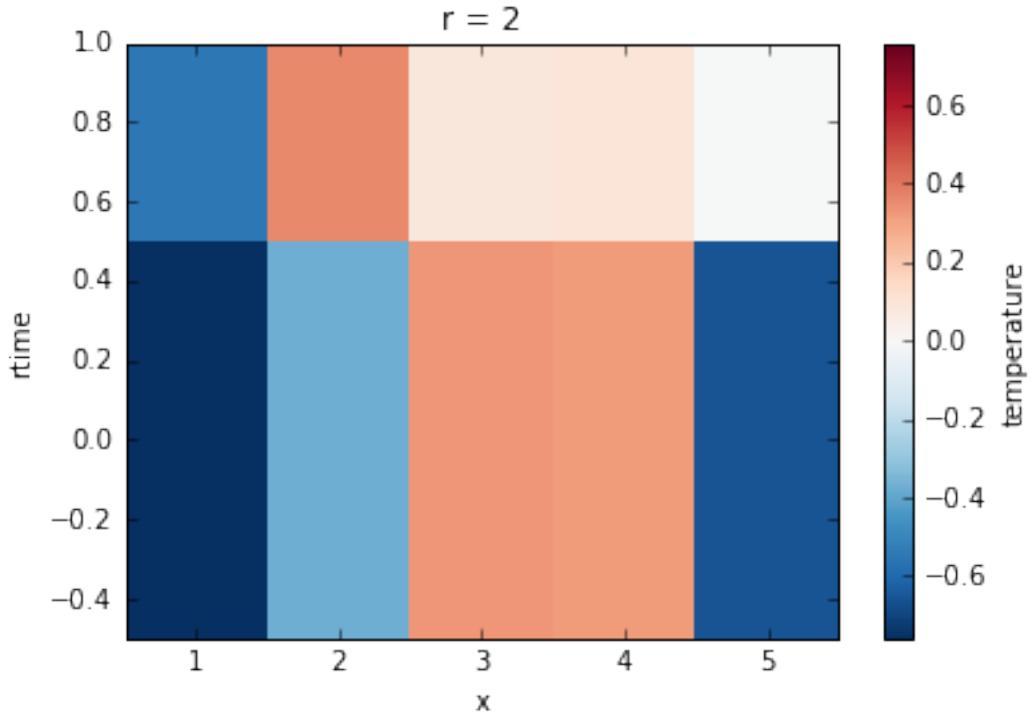


In [15]:
```
dat.coords['rtime'] = dat.time / dat.r
dat.coords
```

```
Out[15]: Coordinates:
           * y        (y) int64 1 2 3 4 5
           * x        (x) int64 1 2 3 4 5
           * r        (r) int64 1 2 3
           * time     (time) int64 1 2 3
             rtime    (time, r) int64 1 0 0 2 1 0 3 1 1
```

```
In [22]: # this works fine
         dat.temperature.sel(r=2).mean('y').plot(x='x', y='rtime')
```

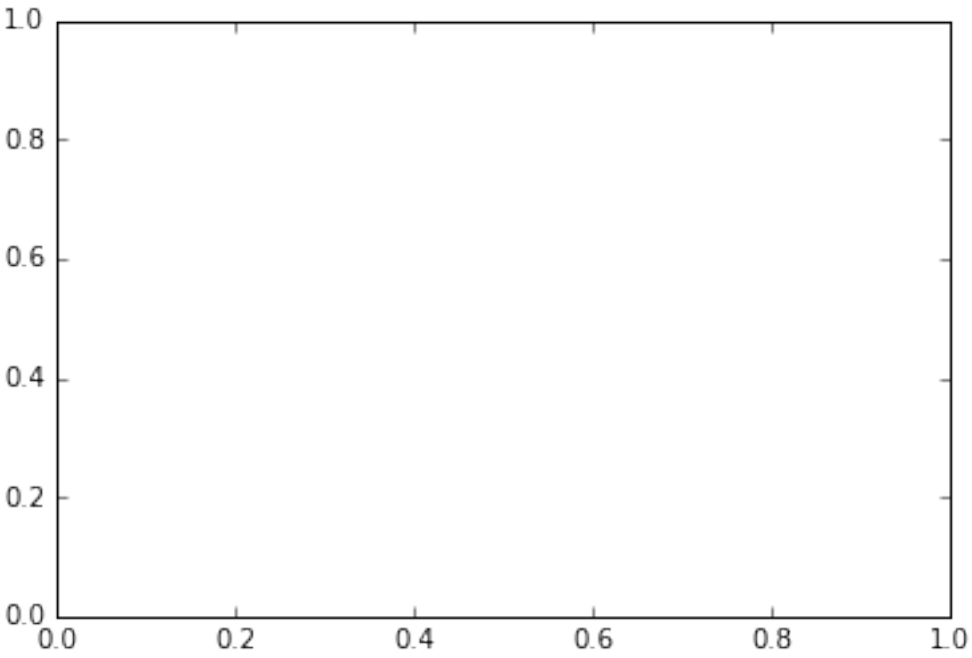
```
Out[22]: <matplotlib.collections.QuadMesh at 0x7f22f74e8610>
```




```
In [21]: # this fails
         dat.temperature.sel(r=2).mean('y').plot(x='rtime', y='x')
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)

<ipython-input-21-0d2d1ef1f399> in <module>()
----> 1 dat.temperature.sel(r=2).mean('y').plot(x='rtime', y='x')


/scratch/jp492/envs/gfdl/lib/python2.7/site-packages/xarray/plot/plot.pyc in __call__(self, **kwa
244
245     def __call__(self, **kwargs):
--> 246         return plot(self._da, **kwargs)
```

```
    247
    248     @functools.wraps(hist)


    /scratch/jp492/envs/gfdl/lib/python2.7/site-packages/xarray/plot/plot.pyc in plot(darray, row, c
    122     kwargs['ax'] = ax
    123
--> 124     return plotfunc(darray, **kwargs)
    125
    126


    /scratch/jp492/envs/gfdl/lib/python2.7/site-packages/xarray/plot/plot.pyc in newplotfunc(darray
    414                                 vmin=cmap_params['vmin'],
    415                                 vmax=cmap_params['vmax'],
--> 416                                 **kwargs)
    417
    418         # Label the plot with metadata


    /scratch/jp492/envs/gfdl/lib/python2.7/site-packages/xarray/plot/plot.pyc in pcolormesh(x, y, z
    544     y = _infer_interval_breaks(y)
    545
--> 546     primitive = ax.pcolormesh(x, y, z, **kwargs)
    547
    548     # by default, pcolormesh picks "round" values for bounds


    /scratch/jp492/envs/gfdl/lib/python2.7/site-packages/matplotlib/__init__.pyc in inner(ax, *args,
   1810                     warnings.warn(msg % (label_namer, func.__name__),
   1811                                   RuntimeWarning, stacklevel=2)
-> 1812             return func(ax, *args, **kwargs)
   1813         pre_doc = inner.__doc__
   1814         if pre_doc is None:


    /scratch/jp492/envs/gfdl/lib/python2.7/site-packages/matplotlib/axes/_axes.pyc in pcolormesh(sel
   5393         allmatch = (shading == 'gouraud')
   5394
-> 5395         X, Y, C = self._pcolorargs('pcolormesh', *args, allmatch=allmatch)
   5396         Ny, Nx = X.shape
   5397


    /scratch/jp492/envs/gfdl/lib/python2.7/site-packages/matplotlib/axes/_axes.pyc in _pcolorargs(fu
   5019                 raise TypeError('Dimensions of C %s are incompatible with'
   5020                                 ' X (%d) and/or Y (%d); see help(%s)' % (
-> 5021                                     C.shape, Nx, Ny, funcname))
   5022             C = C[:Ny - 1, :Nx - 1]
   5023         return X, Y, C


    TypeError: Dimensions of C (3, 5) are incompatible with X (4) and/or Y (6); see help(pcolormesh)
```



In [ ]: