

In [23]: runfile('D:/ISS/MTech2019/ISY5002/ISY5002-ISSM/ISSM\_Assignment/ISSM\_CA3/ISSM\_CA3\_GC\_Test.py', wdir='D:/ISS/MTech2019/ISY5002/ISY5002-ISSM/ISSM\_Assignment/ISSM\_CA3')

Layer (type)	Output Shape	Param #
input_21 (InputLayer)	(None, 32, 20, 20, 1)	0
conv3d_80 (Conv3D)	(None, 32, 20, 20, 16)	144
conv3d_81 (Conv3D)	(None, 16, 10, 20, 32)	4128
conv3d_82 (Conv3D)	(None, 8, 5, 20, 64)	16448
conv3d_83 (Conv3D)	(None, 4, 3, 20, 128)	65664
conv3d_transpose_80 (Conv3DT	(None, 8, 6, 21, 128)	131200
lambda_20 (Lambda)	(None, 8, 5, 20, 128)	0
conv3d_transpose_81 (Conv3DT	(None, 16, 10, 20, 64)	65600
conv3d_transpose_82 (Conv3DT	(None, 32, 20, 20, 32)	16416
conv3d_transpose_83 (Conv3DT	(None, 32, 20, 20, 1)	257
Total params: 299,857		
Trainable params: 299,857		
Non-trainable params: 0		

Train on 320 samples, validate on 80 samples

Epoch 1/20

319/320 [=====>.] - ETA: 0s - loss: 0.0180 - mean\_squared\_error: 0.0180

Epoch 00001: val\_loss improved from inf to 0.00015, saving model to CA3ModelV1\_model.hdf5

320/320 [=====] - 11s 36ms/sample - loss: 0.0179 - mean\_squared\_error: 0.0179 - val\_loss: 1.4763e-04 - val\_mean\_squared\_error: 1.4763e-04

Epoch 2/20

319/320 [=====>.] - ETA: 0s - loss: 7.9038e-05 - mean\_squared\_error: 7.9038e-05

Epoch 00002: val\_loss improved from 0.00015 to 0.00004, saving model to CA3ModelV1\_model.hdf5

320/320 [=====] - 7s 21ms/sample - loss: 7.8924e-05 - mean\_squared\_error: 7.8924e-05 - val\_loss: 4.2551e-05 - val\_mean\_squared\_error: 4.2551e-05

Epoch 3/20

319/320 [=====>.] - ETA: 0s - loss: 3.1747e-05 - mean\_squared\_error: 3.1747e-05

Epoch 00003: val\_loss improved from 0.00004 to 0.00003, saving model to CA3ModelV1\_model.hdf5

320/320 [=====] - 7s 21ms/sample - loss: 3.1729e-05 - mean\_squared\_error: 3.1729e-05 - val\_loss: 2.5937e-05 - val\_mean\_squared\_error: 2.5937e-05

Epoch 4/20

318/320 [=====>.] - ETA: 0s - loss: 2.3799e-05 - mean\_squared\_error: 2.3799e-05

Epoch 00004: val\_loss improved from 0.00003 to 0.00002, saving model to CA3ModelV1\_model.hdf5

320/320 [=====] - 7s 20ms/sample - loss: 2.3793e-05 - mean\_squared\_error: 2.3793e-05 - val\_loss: 2.2818e-05 - val\_mean\_squared\_error: 2.2818e-05

Epoch 5/20

317/320 [=====>.] - ETA: 0s - loss: 2.2392e-05 - mean\_squared\_error: 2.2392e-05

Epoch 00005: val\_loss improved from 0.00002 to 0.00002, saving model to CA3ModelV1\_model.hdf5

320/320 [=====] - 6s 20ms/sample - loss: 2.2389e-05 - mean\_squared\_error: 2.2389e-05 - val\_loss: 2.2423e-05 - val\_mean\_squared\_error: 2.2423e-05

Epoch 6/20

317/320 [=====>.] - ETA: 0s - loss: 2.1983e-05 - mean\_squared\_error: 2.1983e-05

Epoch 00006: val\_loss improved from 0.00002 to 0.00002, saving model to CA3ModelV1\_model.hdf5

320/320 [=====] - 6s 20ms/sample - loss: 2.1985e-05 - mean\_squared\_error: 2.1985e-05 - val\_loss: 2.1875e-05 - val\_mean\_squared\_error: 2.1875e-05

Epoch 7/20

318/320 [=====>.] - ETA: 0s - loss: 2.1704e-05 - mean\_squared\_error: 2.1704e-05

Epoch 00007: val\_loss did not improve from 0.00002

320/320 [=====] - 6s 20ms/sample - loss: 2.1703e-05 - mean\_squared\_error: 2.1703e-05 - val\_loss: 2.1913e-05 - val\_mean\_squared\_error: 2.1913e-05

Epoch 8/20

317/320 [=====>.] - ETA: 0s - loss: 2.1497e-05 - mean\_squared\_error: 2.1497e-05

Epoch 00008: val\_loss improved from 0.00002 to 0.00002, saving model to CA3ModelV1\_model.hdf5

320/320 [=====] - 6s 20ms/sample - loss: 2.1499e-05 - mean\_squared\_error: 2.1499e-05 - val\_loss: 2.1672e-05 - val\_mean\_squared\_error: 2.1672e-05

Epoch 9/20

317/320 [=====>.] - ETA: 0s - loss: 2.1385e-05 - mean\_squared\_error: 2.1385e-05

Epoch 00009: val\_loss improved from 0.00002 to 0.00002, saving model to CA3ModelV1\_model.hdf5

320/320 [=====] - 6s 20ms/sample - loss: 2.1389e-05 - mean\_squared\_error: 2.1389e-05 - val\_loss: 2.1397e-05 - val\_mean\_squared\_error: 2.1397e-05

Epoch 10/20

318/320 [=====>.] - ETA: 0s - loss: 2.1245e-05 - mean\_squared\_error: 2.1245e-05

Epoch 00010: val\_loss improved from 0.00002 to 0.00002, saving model to CA3ModelV1\_model.hdf5

320/320 [=====] - 6s 20ms/sample - loss: 2.1245e-05 - mean\_squared\_error: 2.1245e-05 - val\_loss: 2.1135e-05 - val\_mean\_squared\_error: 2.1135e-05

Epoch 11/20

318/320 [=====>.] - ETA: 0s - loss: 2.1151e-05 - mean\_squared\_error: 2.1151e-05

Epoch 00011: val\_loss did not improve from 0.00002

320/320 [=====] - 6s 20ms/sample - loss: 2.1148e-05 - mean\_squared\_error: 2.1148e-05 - val\_loss: 2.1231e-05 - val\_mean\_squared\_error: 2.1231e-05

Epoch 12/20

318/320 [=====>.] - ETA: 0s - loss: 2.1060e-05 - mean\_squared\_error: 2.1060e-05

Epoch 00012: val\_loss improved from 0.00002 to 0.00002, saving model to CA3ModelV1\_model.hdf5

320/320 [=====] - 6s 20ms/sample - loss: 2.1060e-05 - mean\_squared\_error: 2.1060e-05 - val\_loss: 2.0926e-05 - val\_mean\_squared\_error: 2.0926e-05

Epoch 13/20

319/320 [=====>.] - ETA: 0s - loss: 2.1031e-05 - mean\_squared\_error: 2.1031e-05

Epoch 00013: val\_loss did not improve from 0.00002

320/320 [=====] - 6s 20ms/sample - loss: 2.1033e-05 - mean\_squared\_error: 2.1033e-05 - val\_loss: 2.1094e-05 - val\_mean\_squared\_error: 2.1094e-05

Epoch 14/20

319/320 [=====>.] - ETA: 0s - loss: 2.0852e-05 - mean\_squared\_error: 2.0852e-05

Epoch 00014: val\_loss improved from 0.00002 to 0.00002, saving model to CA3ModelV1\_model.hdf5

320/320 [=====] - 6s 20ms/sample - loss: 2.0851e-05 - mean\_squared\_error: 2.0851e-05 - val\_loss: 2.0762e-05 - val\_mean\_squared\_error: 2.0762e-05

Epoch 15/20

318/320 [=====>.] - ETA: 0s - loss: 2.0866e-05 - mean\_squared\_error: 2.0866e-05

Epoch 00015: val\_loss did not improve from 0.00002

320/320 [=====] - 6s 20ms/sample - loss: 2.0863e-05 - mean\_squared\_error: 2.0863e-05 - val\_loss: 2.0834e-05 - val\_mean\_squared\_error: 2.0834e-05

Epoch 16/20

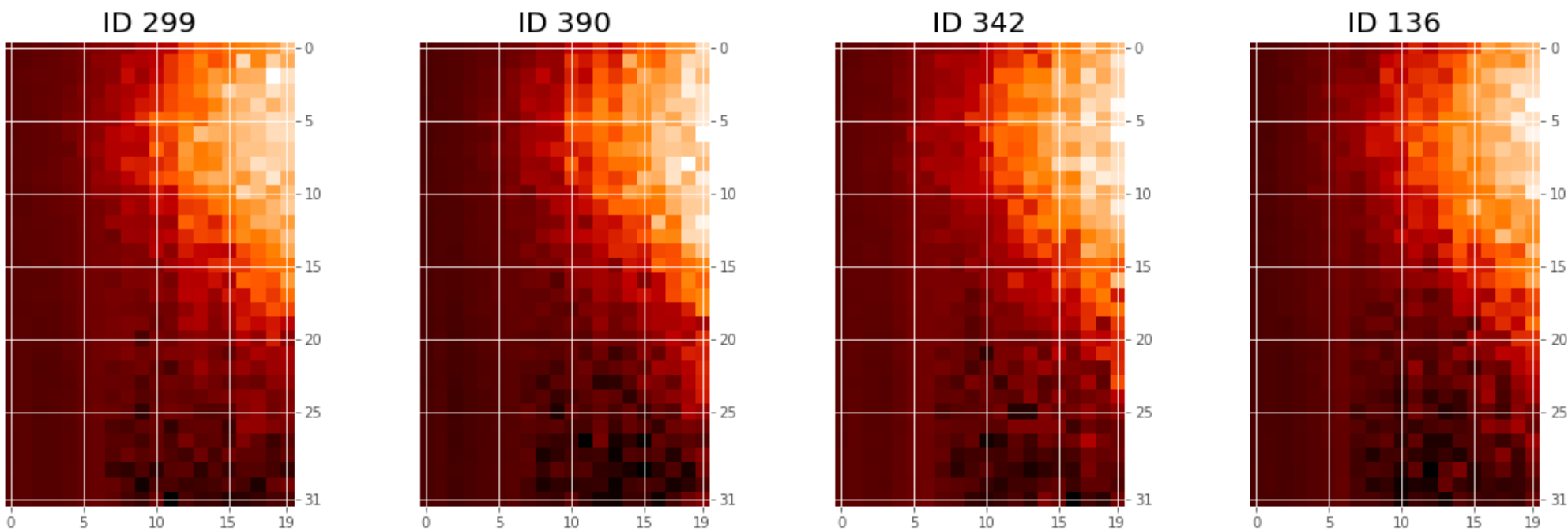
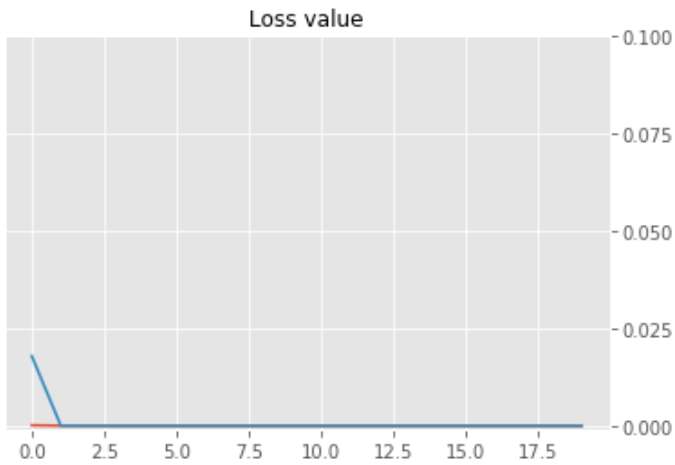
319/320 [=====>.] - ETA: 0s - loss: 2.0812e-05 - mean\_squared\_error: 2.0812e-05

Epoch 00016: val\_loss did not improve from 0.00002

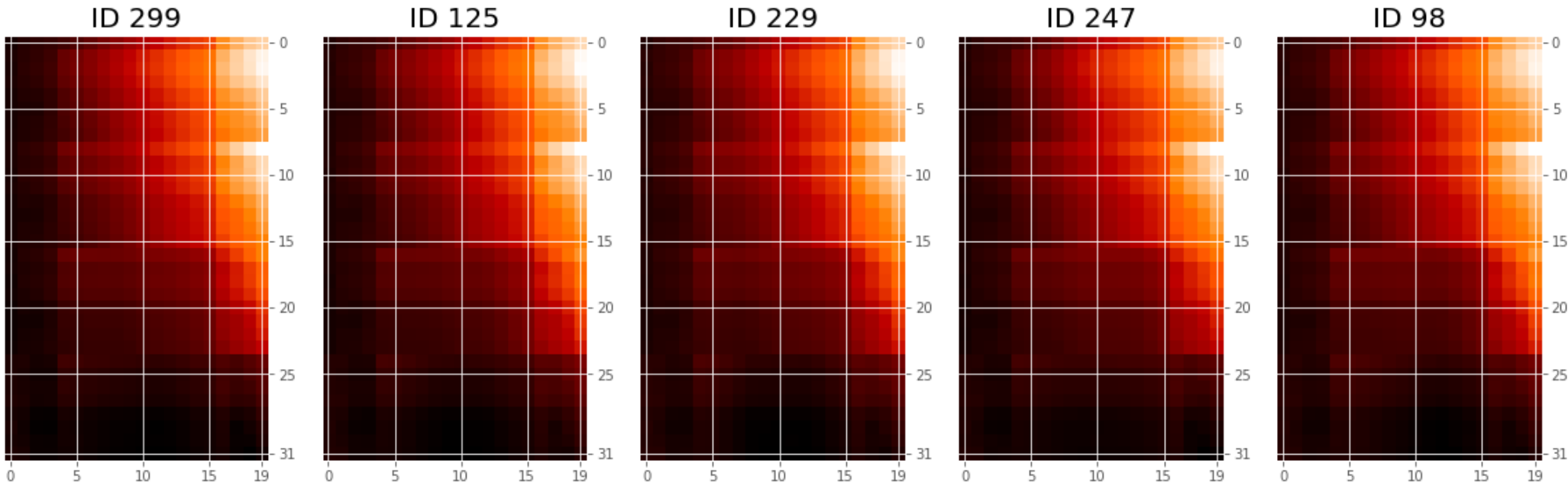
320/320 [=====] - 6s 20ms/sample - loss: 2.0813e-05 - mean\_squared\_error: 2.0813e-05 - val\_loss: 2.1065e-05 - val\_mean\_squared\_error: 2.1065e-05  
Epoch 17/20  
318/320 [=====>.] - ETA: 0s - loss: 2.0657e-05 - mean\_squared\_error: 2.0657e-05  
Epoch 00017: val\_loss improved from 0.00002 to 0.00002, saving model to CA3ModelV1\_model.hdf5  
320/320 [=====] - 6s 20ms/sample - loss: 2.0657e-05 - mean\_squared\_error: 2.0657e-05 - val\_loss: 2.0590e-05 - val\_mean\_squared\_error: 2.0590e-05  
Epoch 18/20  
318/320 [=====>.] - ETA: 0s - loss: 2.0829e-05 - mean\_squared\_error: 2.0829e-05  
Epoch 00018: val\_loss did not improve from 0.00002  
320/320 [=====] - 6s 20ms/sample - loss: 2.0838e-05 - mean\_squared\_error: 2.0838e-05 - val\_loss: 2.3848e-05 - val\_mean\_squared\_error: 2.3848e-05  
Epoch 19/20  
317/320 [=====>.] - ETA: 0s - loss: 2.0603e-05 - mean\_squared\_error: 2.0603e-05  
Epoch 00019: val\_loss improved from 0.00002 to 0.00002, saving model to CA3ModelV1\_model.hdf5  
320/320 [=====] - 6s 20ms/sample - loss: 2.0603e-05 - mean\_squared\_error: 2.0603e-05 - val\_loss: 2.0255e-05 - val\_mean\_squared\_error: 2.0255e-05  
Epoch 20/20  
318/320 [=====>.] - ETA: 0s - loss: 2.0551e-05 - mean\_squared\_error: 2.0551e-05  
Epoch 00020: val\_loss did not improve from 0.00002  
320/320 [=====] - 6s 20ms/sample - loss: 2.0555e-05 - mean\_squared\_error: 2.0555e-05 - val\_loss: 2.0900e-05 - val\_mean\_squared\_error: 2.0900e-05

Training data, shape: (320, 32, 20, 20, 1)  
Decoded Training data, shape: (320, 32, 20, 20, 1)  
Test data, shape: (80, 32, 20, 20, 1)  
Decoded Test data, shape: (80, 32, 20, 20, 1)

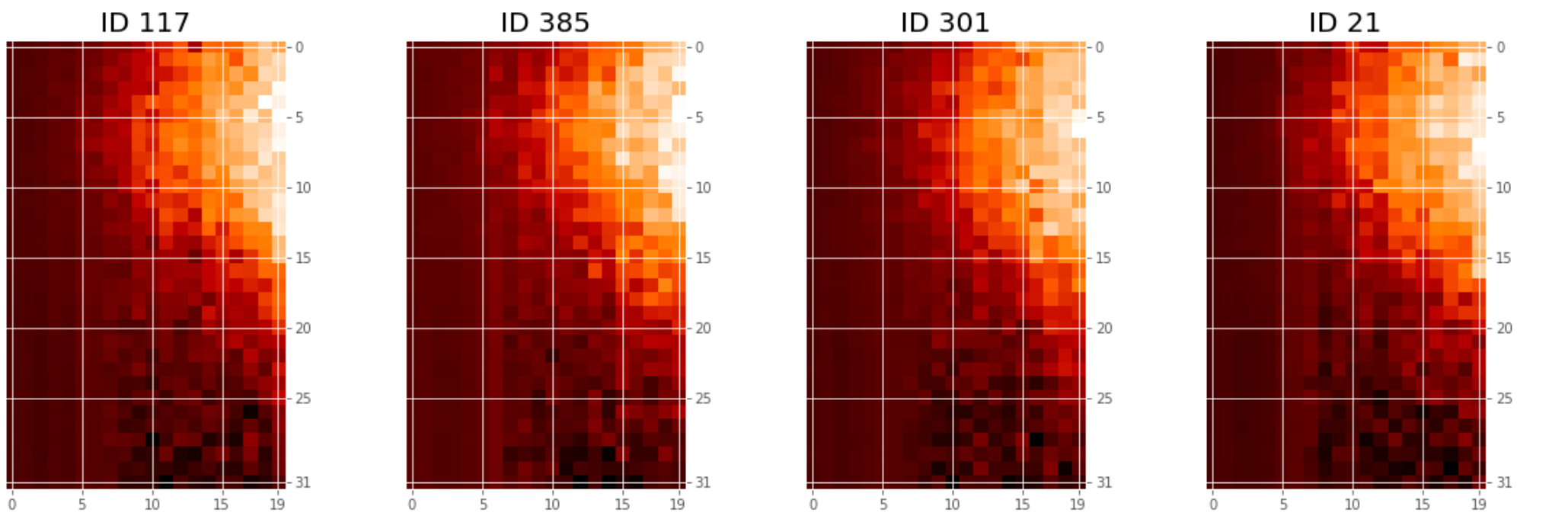
Training Data - Borad Temperature



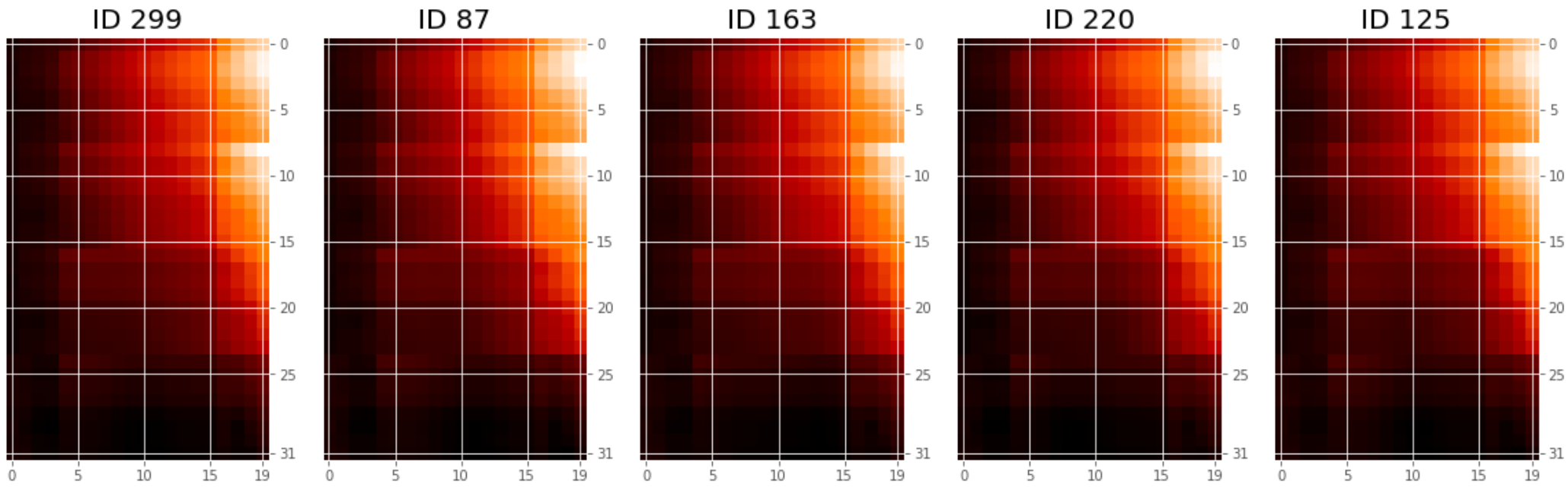
Encoded Training Data - Borad Temperature



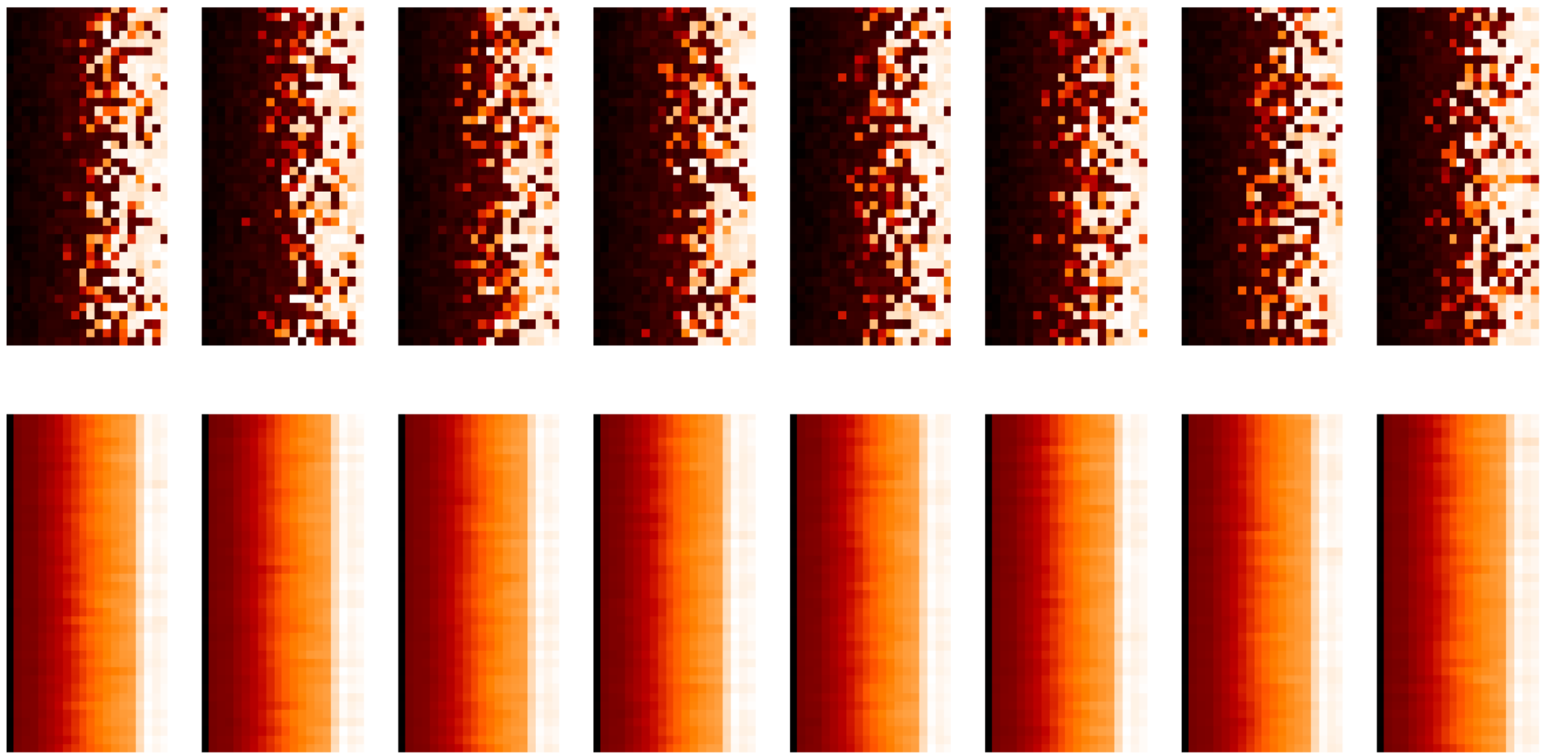
Test Data - Borad Temperature



Encoded Test Data - Borad Temperature



Training vs Encoded Data - Chip [0, 0] Temperature



Test vs Encoded Data - Chip [0, 0] Temperature

