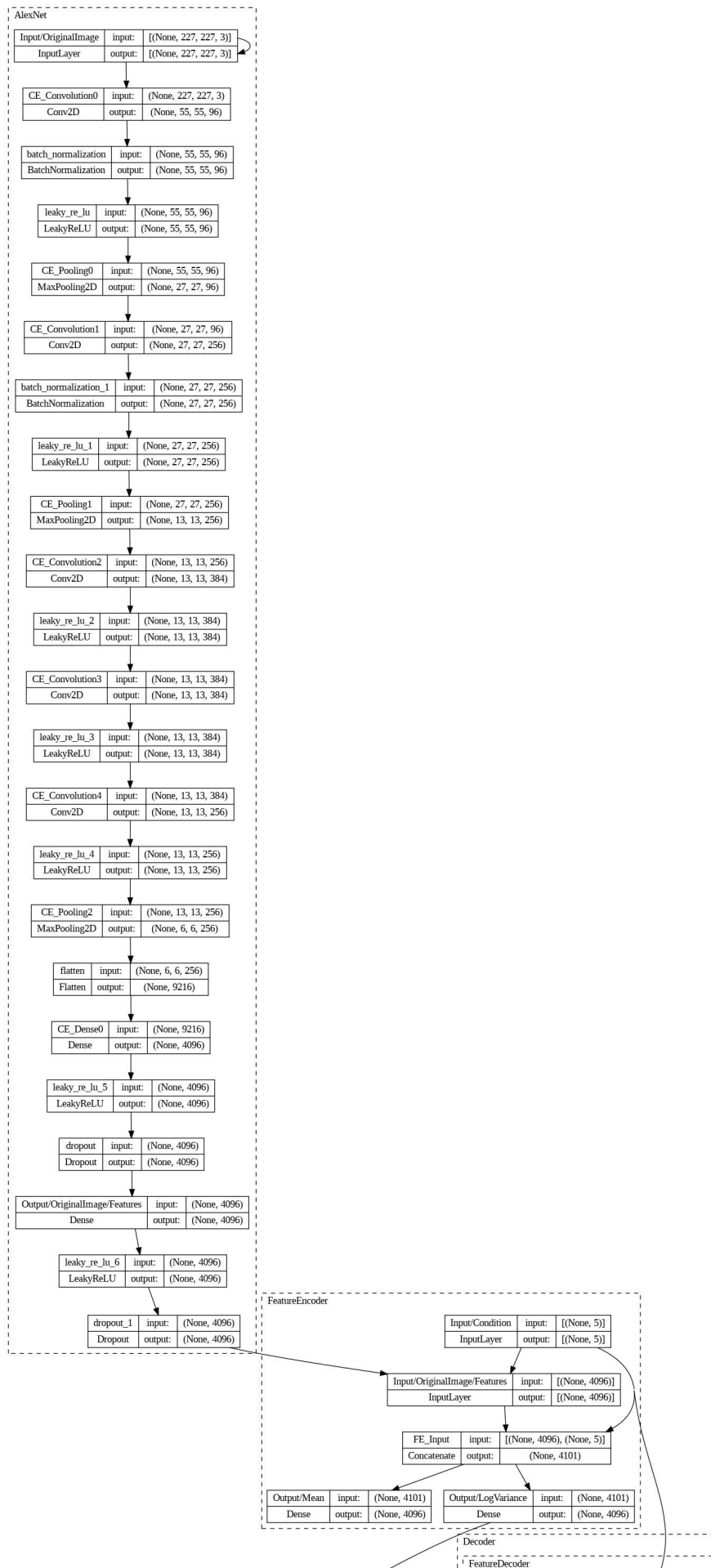


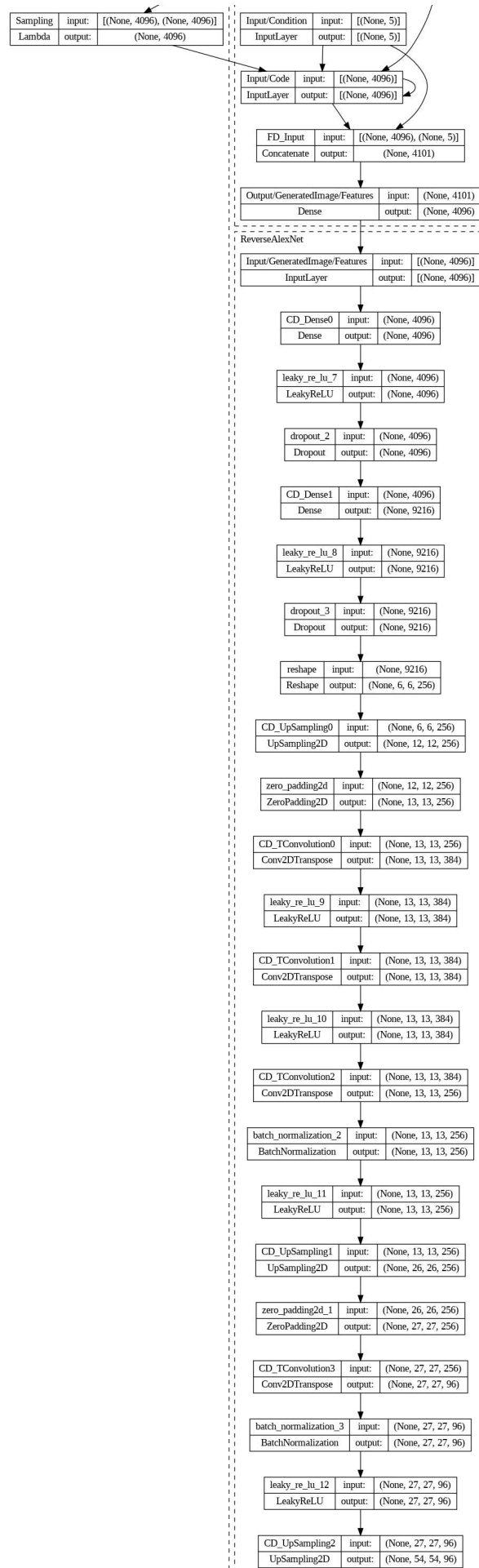
Conditional Variational AutoEncoder (CVAE)

Model: "CVAE"

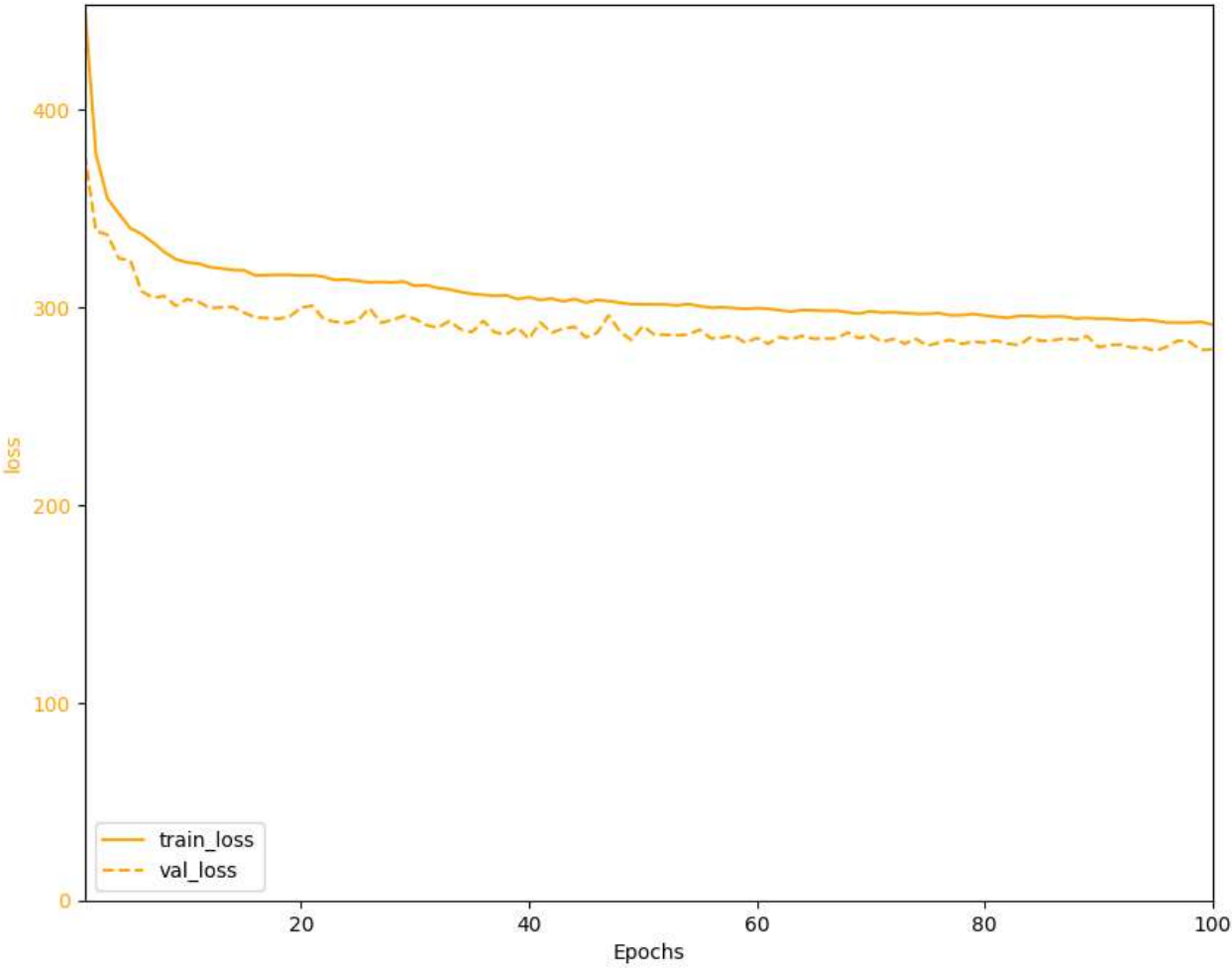
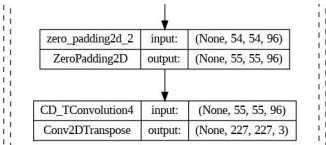
Layer (type)	Output Shape	Param #	Connected to
Input/OriginalImage (Input Layer)	[(None, 227, 227, 3)]	0	[]
AlexNet (Sequential)	(None, 4096)	58282752	['Input/OriginalImage[0][0]']
Input/Condition (InputLayer)	[(None, 5)]	0	[]
FeatureEncoder (Functional)	[(None, 4096), (None, 4096)]	33603584	['AlexNet[1][0]', 'Input/Condition[0][0]']
Sampling (Lambda)	(None, 4096)	0	['FeatureEncoder[1][0]', 'FeatureEncoder[1][1]']
Decoder (Functional)	(None, 227, 227, 3)	75089411	['Sampling[0][0]', 'Input/Condition[0][0]']
=====			
Total params: 166975747 (636.96 MB)			
Trainable params: 166974339 (636.96 MB)			
Non-trainable params: 1408 (5.50 KB)			

Out[]:

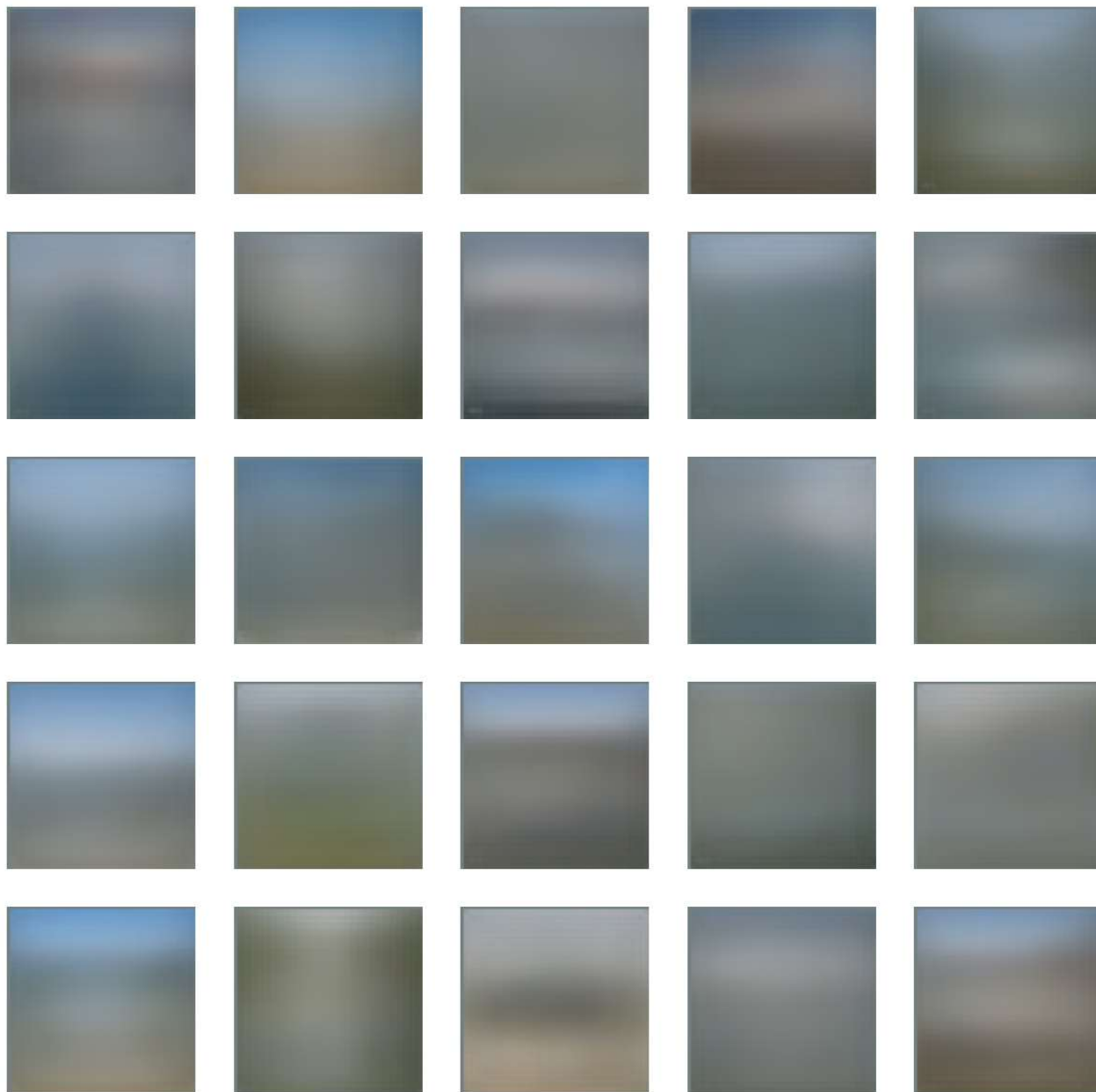




Training



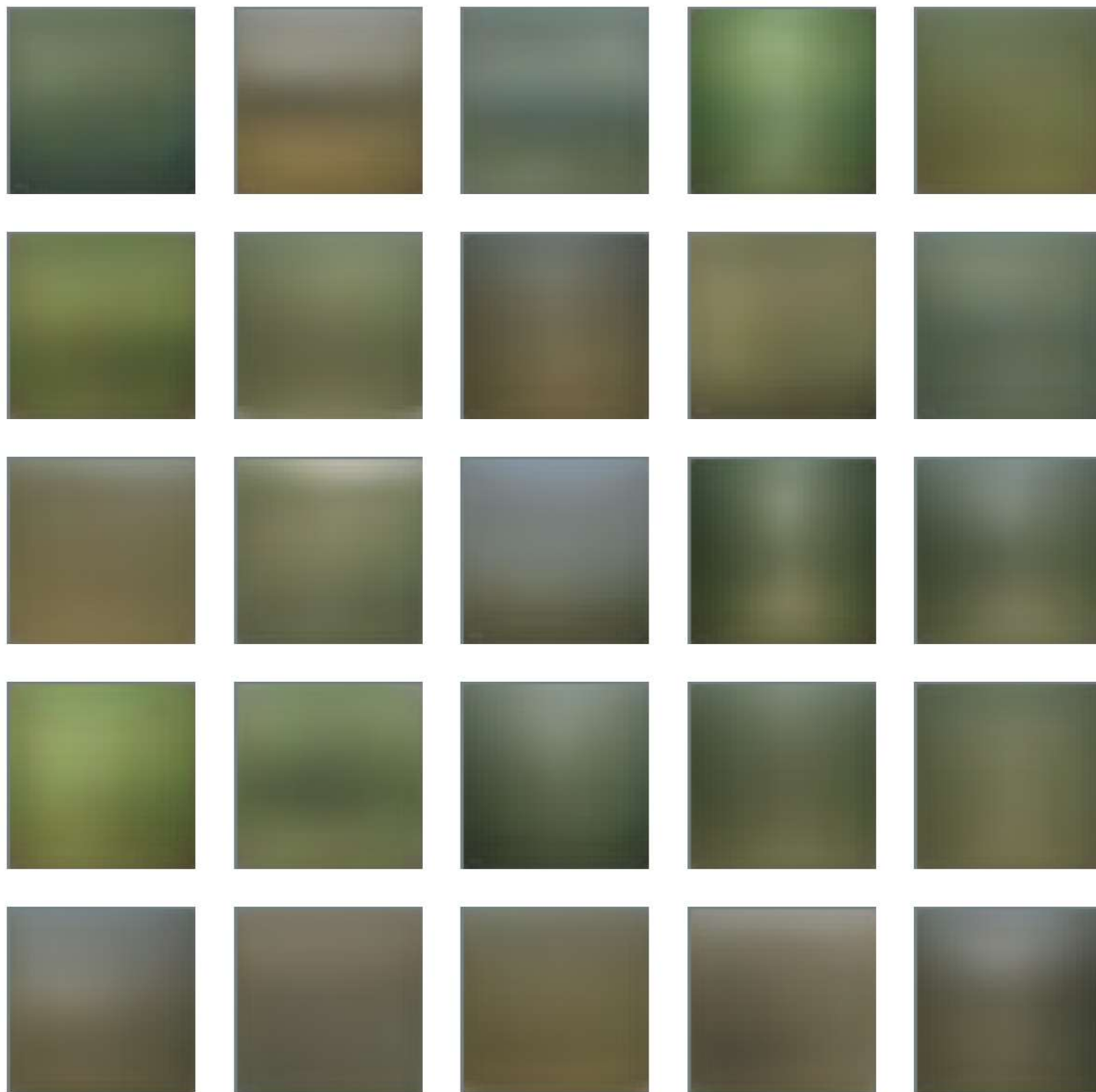
Coasts



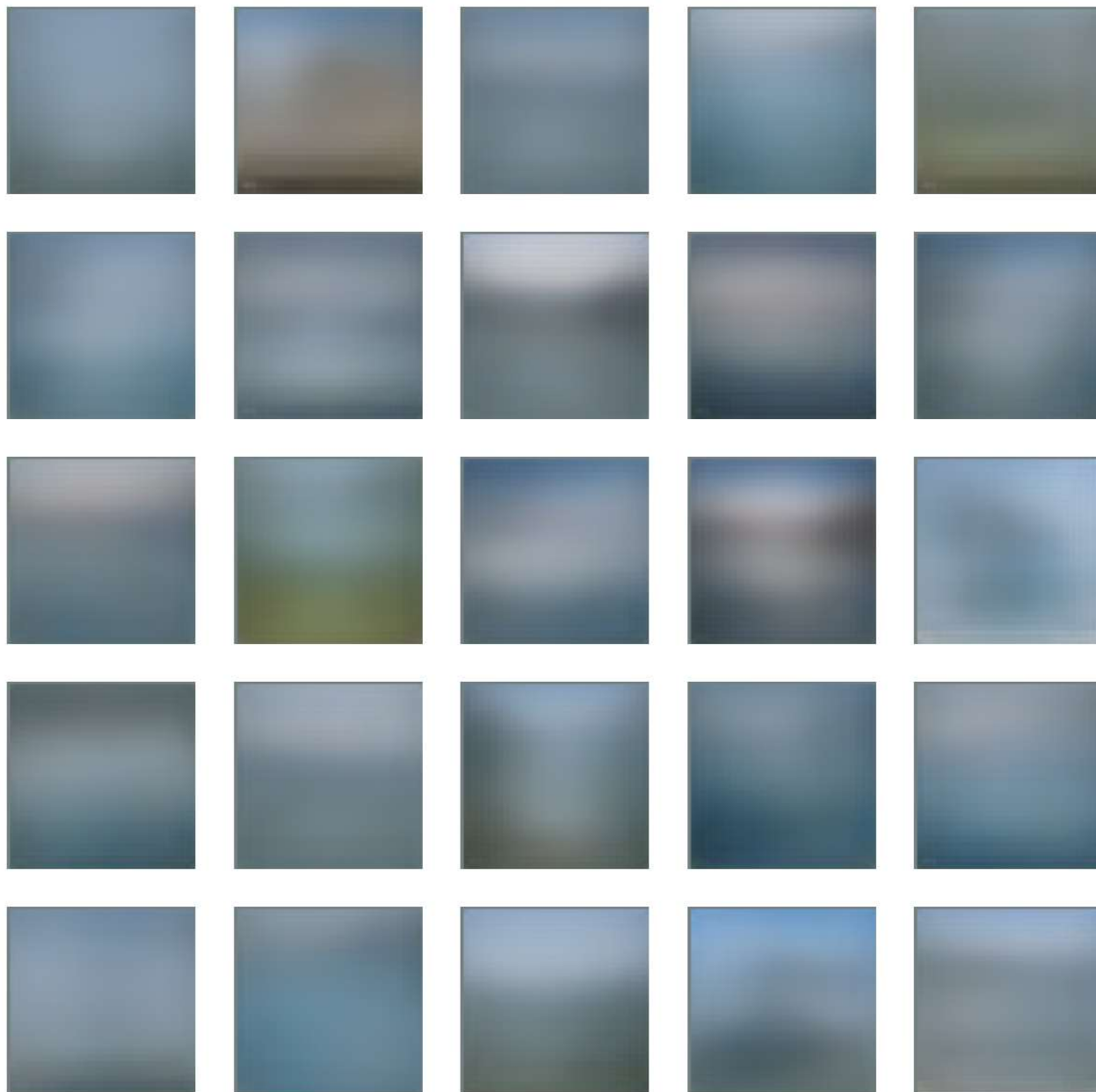
Deserts



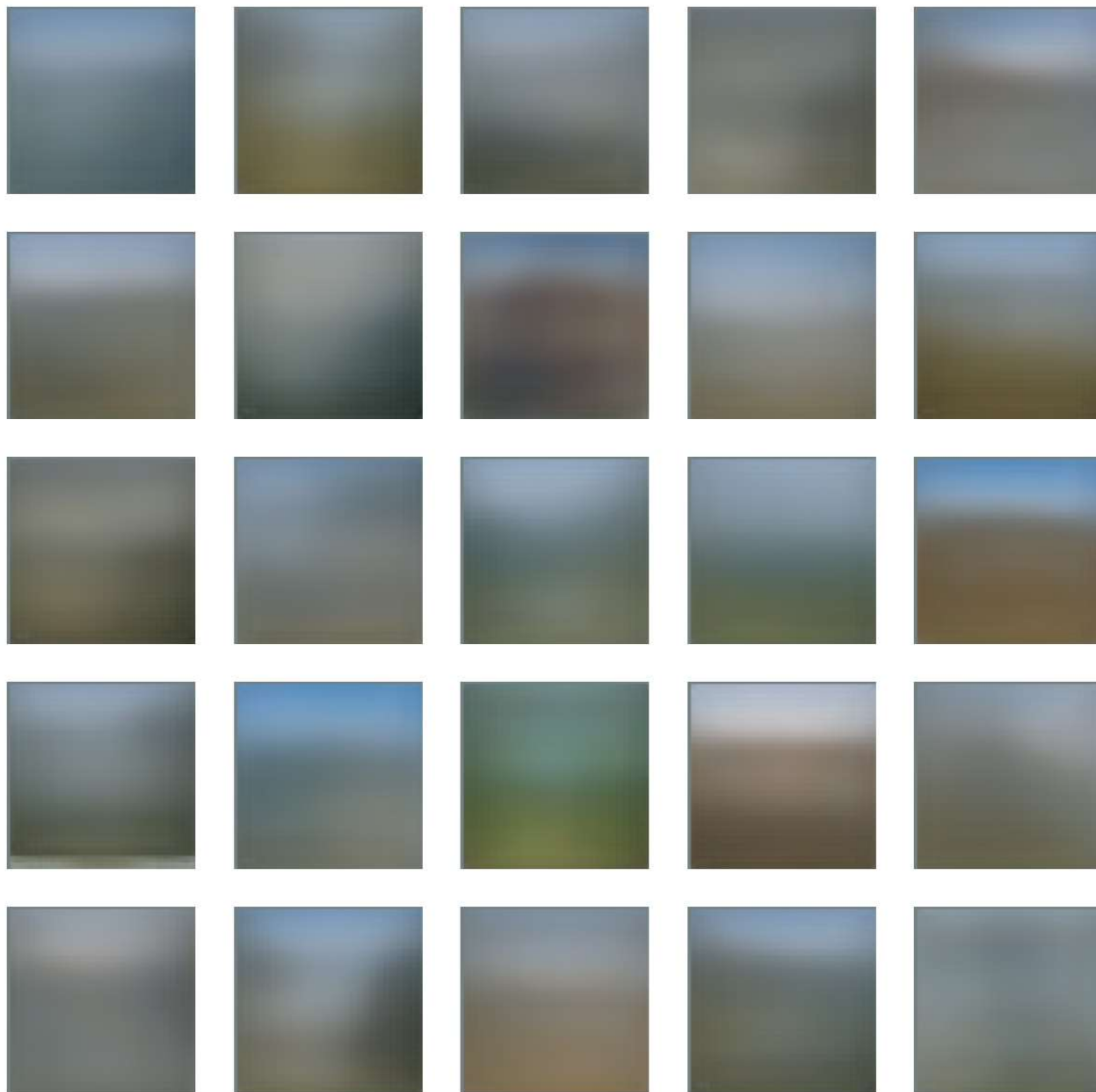
Forests



Glaciers



Mountains



Performance Summary

```

[2023-11-16 17:41:49.277435]: Configuration
[2023-11-16 17:41:49.277559]: - Preprocessing:
[2023-11-16 17:41:49.277595]:   - Dataset Size: 12000
[2023-11-16 17:41:49.417797]:   - Image Size: (227, 227, 3)
[2023-11-16 17:41:49.597477]:   - Label Size: (5,)
[2023-11-16 17:41:49.598587]: - Augmentations:
[2023-11-16 17:41:49.598779]:   - Grayscale: No
[2023-11-16 17:41:49.598906]:   - Cut Out: No
[2023-11-16 17:41:49.599118]: - Architecture:
[2023-11-16 17:41:49.599260]:   - # Classes: 5
[2023-11-16 17:41:49.599445]:   - Code Size: 4096
[2023-11-16 17:41:49.599629]:   - Hidden Layers: []
[2023-11-16 17:41:49.606797]:   - CNN Activation: <keras.src.layers.activation.leaky_relu.LeakyReLU object at
0x7f510c663ee0>
[2023-11-16 17:41:49.607030]:   - Hidden Activation: sigmoid
[2023-11-16 17:41:49.609254]:   - Output Activation: sigmoid
[2023-11-16 17:41:49.609416]: - Training:
[2023-11-16 17:41:49.609554]:   - Training Set Size: 8400
[2023-11-16 17:41:49.609737]:   - Validation Size: 1800
[2023-11-16 17:41:49.609914]:   - Test Size: 1800
[2023-11-16 17:41:49.610039]:   - Shuffle Size: 1024
[2023-11-16 17:41:49.610160]:   - Batch Size: 16
[2023-11-16 17:41:49.615652]:   - Max Epochs: 100
[2023-11-16 17:41:49.615859]:   - Patience: 15
[2023-11-16 17:41:49.616045]:   - KL Coefficient: 1
[2023-11-16 17:41:49.621817]:   - Optimizer: <keras.src.optimizers.adam.Adam object at 0x7f510c663d30>
[2023-11-16 17:41:49.623276]:   - Learning Rate: 0.0001
[2023-11-16 17:41:49.624092]:   - Pre-trained: No

[2023-11-16 17:41:49.624355]: Reconstruction & Regularization
[2023-11-16 17:41:49.624503]: Training loss: 278.482
[2023-11-16 17:41:49.624643]: Validation loss: 278.382
[2023-11-16 17:41:49.624753]: Test loss: 285.331

[2023-11-16 17:41:49.624909]: Generation Quality
[2023-11-16 17:41:49.629595]: Coast      | accuracy: 43.36% | loss: 2.746
[2023-11-16 17:41:49.629774]: Desert    | accuracy: 82.03% | loss: 0.835
[2023-11-16 17:41:49.629912]: Forest    | accuracy: 0.78%  | loss: 11.292
[2023-11-16 17:41:49.629996]: Glacier   | accuracy: 0.00%  | loss: 12.759
[2023-11-16 17:41:49.630079]: Mountain  | accuracy: 56.45% | loss: 1.909
[2023-11-16 17:41:49.630152]: -----
[2023-11-16 17:41:49.630289]: Average   | accuracy: 36.52% | loss: 5.908

```