CLAIMS

1. A method of video decoding in a decoder, comprising:

receiving a coded video sequence from a video bitstream, wherein the coded video sequence comprises one or more layers;

decoding, from the coded video sequence, a syntax element video_parameter_set_id that is signaled in a sequence parameter set;

obtaining a value of the syntax element video_parameter_set_id; and

determining whether the value of the syntax element video_parameter_set_id is same in all sequence parameter sets in the coded video sequence, wherein the all sequence parameter sets are referred to by coded pictures in the coded video sequence, across the one or more layers.

2. The method according to claim 1, further comprising:

determining whether references are associated with any of a first access unit (AU) and a second AU according to at least one picture order count (POC) signal value included with the coded video sequence; and

outputting a first quantity of the references set to the first AU and a second quantity of the references set to the second AU based on the at least one POC signal value, wherein the POC signal value is a POC cycle value for the AU, for indicating how many different and consecutive POC values are associated with the same AU.

3. The method according claim 2,

wherein the references comprise at least one of pictures, slices, and tiles of the coded video sequence.

4. The method according to claim 3,

wherein determining whether the references are associated with any of the first AU and the second AU comprises comparing respective POC values of each of the references with the at least one POC signal value.

5. The method according to claim 4,

wherein determining whether the references are associated with any of the first AU and the second AU further comprises setting the first quantity of the references to the first AU, in response to determining that each of the first quantity of the references respectively comprises one of a plurality of POC values less than the at least one POC signal value, and setting the second quantity of the references to the second AU, in response to determining that each of the second quantity of the references respectively comprises one of a second plurality of POC values equal to or greater than the at least one POC signal value,

6. The method according to claim 5,

wherein the references comprise the slices, and

wherein the at least one POC signal value is included in a slice header of the coded video sequence.

7. The method according to any one of claims 1 to 6,

wherein the coded video sequence comprises a video parameter set (VPS) data identifying a plurality of spatial layers of the coded video sequence.

8. The method according to claim 7,

wherein the at least one POC signal value is included in the VPS data of the coded video sequence.

9. The method according to claim 8, further comprising:

determining whether the VPS data comprises at least one flag indicating whether one or more of the references are divided into a plurality of sub-regions; and

determining, in a case where the at least one flag indicates that the one or more of the references are divided into the plurality of sub-regions, at least one of, in luma samples, a full picture width and a full picture height of a picture of the one or more of the references.

10. The method according to claim 9, further comprising:

determining, in the case where the at least one flag indicates that the one or more of the references are divided into the plurality of sub-regions, a signaling value, included in the sequence parameter set of the coded video sequence, specifying an offset of a portion of at least one of the sub-regions.

11. The method according to any one of claims 1 to 10,

wherein the coded video sequence represents a spherical 360 picture.

12. An apparatus for video decoding, the apparatus comprising:

at least one memory configured to store computer program code;

at least one processor configured to access the computer program code and operate as instructed by the computer program code to perform the method of any one of claims 1 to 11.

13. A method of video encoding in an encoder, comprising:

generating a coded video sequence, wherein the coded video sequence comprises one or more layers;

encoding, into a video bitstream, the coded video sequence that comprises a syntax element video_parameter_set_id in a sequence parameter set; and

constraining the value of the syntax element video_parameter_set_id to be the same in all sequence parameter sets in the coded video sequence, wherein the all sequence parameter sets are referred to by coded pictures in the coded video sequence, across the one or more layers.

14. An apparatus for video encoding, the apparatus comprising:

at least one memory configured to store computer program code;

at least one processor configured to access the computer program code and operate as instructed by the computer program code to perform the method of claim13.

15. A non-transitory computer readable medium storing a program and a coded video bitstream, wherein the program, when executed by a computer, causes the computer to perform the method of claim 13 to generate the coded video bitstream; transmitting the coded video bitstream.